

NATIONAL MONSOON CONTINGENCY PLAN 2021



National Disaster Management Authority
Prime Minister's Office
Government of Pakistan

NATIONAL MONSOON CONTINGENCY PLAN 2021

(To be read in conjunction with National Disaster Response Plan 2019 & other guidelines/
instruction issued by NDMA in this regard from time to time)

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General

1. Pakistan has diverse topographic landscape from high mountains in the North to deserts and marshes in the South. Generally, Pakistan receives variable amount of rainfall from Mid-June to Mid-September with a little variation in afore-mentioned period every year during Monsoon season. The onset of Monsoon in the country impends floods i.e. **flash, riverine and urban floods** as the most recurrent phenomenon along with other potential hazards like **cloudburst, landslides and Glacial Lakes Outburst Floods (GLOFs)** causing various challenges to national, provincial and district levels disaster management (DM) systems in the country. The recent experience of Monsoon-2020 highlighted the new factors like variations in forecasted and actual rainfall, skewed distribution of Flood Fighting Equipment (FFE) in major cities, blockage of nullahs, shortage of high-powered de-watering pumps, electrocution due to water inundation, inefficient sewerage disposal system and unplanned urban development projects, compounding the urban flooding phenomenon in the major metropolis.
2. Drought like situation also arises when different areas of south experience low rainfall in contrast to the meteorology and current seasonal forecast of precipitation by Pakistan Meteorological Department (PMD). Moreover, Pakistan is still facing unprecedented social and economic impact due to third wave of COVID-19 pandemic and the upcoming Monsoon season would still require adoption of preventive measures / Standard Operating Procedures (SOPs) to be undertaken by rescue workers and relevant departments.
3. National Disaster Management Authority (NDMA) under clause 9(a) and 9(b) of NDM Act 2010 (enclosed at **Annex A**) is mandated to deal with whole spectrum of DM activities in the paradigm of **PR³** (Preparedness, Response, Recovery and Rehabilitation). NDMA prepares National Monsoon Contingency Plan every year before the onset of Monsoon season through a comprehensive consultative process at provincial and district levels based on analysis of seasonal forecast by the PMD. This plan lays down explicit guidelines for all the tiers of DM authorities / relevant stakeholders for mitigation of likely hazards, preparedness and an effective and timely response to the crises resulting from Monsoon.

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4. This plan has been prepared while mapping available assets, identifying the needs for mobilizing additional resources, clarifying the roles and responsibilities and establishing coordination mechanism for effective response to likely as well as worst case scenario. In this regard, NDMA engaged all the stakeholders to get the latest update on preparatory / mitigation measures in progress for the upcoming Monsoon season, including Strategic Coordination Forum Meeting with UN and other humanitarian partners to identify and map out their resources. Four pre-Monsoon conferences were held to get an update on Monsoon-2021 outlook by the PMD, ongoing flood protection works by Flood Forecasting Commission (FFC) and Provincial Irrigation Departments (PIDs) and positioning of Flood Fighting Equipment (FFE) by the respective Provincial Disaster Management Authorities (PDMAs). In the same context, NDMA staff also visited DM setups in the country to evaluate and coordinate pre-Monsoon activities on ground. In the backdrop of adverse impact of climate change, all the stakeholders were unanimous in concluding that urban flooding in major metropolis would continue to pose a major challenge and therefore, should be the main area of focus.

Overview of Monsoon-2020

5. **Unfolding of Monsoon.** During Monsoon-2020 (1 July 2020 to 30 September 2020), as per PMD, **+41%** above normal rainfall was recorded in the whole country against a prediction of **+10%**. Whereas, **+148%** above normal rainfall was recorded in Sindh against the prediction of “**+20% Above Normal Rainfall from July to September 2020.**” NDMA had alerted the PDMAs and other concerned agencies to initiate mitigation works in their respective areas well in time with special focus on urban flooding. Major events during the Monsoon-2020 were: -

- a. Heavy rainfalls in July / August triggering urban flooding in Karachi, inundation / flooding in other parts of Sindh, flash and normal flooding in parts of Balochistan, Khyber Pakhtunkhwa (KP) and Gilgit Baltistan (GB) and land sliding along Karakorum Highway (KKH) at different locations.
- b. Urban flooding in Karachi due to heavy rains was recorded on following dates: -
 - (1) **July.** 6-7 July, 17th July and 26-27 July 2020.
 - (2) **August.** 6-8 August, 21st August and 25-28 August 2020.



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6. **Damages / Losses.** Detailed assessment of total losses and damages which occurred during the Monsoon-2020 was compiled to ensure optimum recovery and rehabilitation of affected areas. State of damages / losses caused by Monsoon rains in the country (from 15 June to 30 September 2020) is given in Table.1.

Provinces / Regions	Deaths				Injured				Houses Damaged		Roads Damaged	Bridges Damaged
	M	F	C	T	M	F	C	T	P.D.	F.D.		
Balochistan	7	3	11	21	14	1	3	18	971	906	50	3
Khyber Pakhtunkhwa	37	24	64	125	52	22	27	101	746	933	-	3
Punjab	104	-	-	104	175	-	-	175	17	220	-	-
Sindh	80	33	32	145	94	1	1	96	168,544	133,279	-	-
Gilgit-Baltistan	6	1	9	16	4	1	-	5	801	258	-	22
AJ&K	2	2	8	12	4	5	-	9	118	50	-	-
Total	236	63	124	423	343	30	31	404	171,197	135,646	50	28

Table-1 – Summary of Damages / Losses - Monsoon-2020

7. **Actions Taken by NDMA**

- a. **Employment of Armed Forces.** NDMA coordinated employment of Pakistan Army and Pakistan Navy for relief and rescue activities in Tehsil Johi, District Dadu, Sindh.
- b. **Aviation Support for Immediate Rescue.** NDMA coordinated aviation support from Pakistan Army for rescue and relief activities in Diamer (GB), Chitral (KP) and Dadu (Sindh).
- c. **Desilting of Nullahs / Drains in Districts of Karachi.** On directions of the Prime Minister, NDMA employed Frontier Works Organization (FWO) to carry out desilting / cleaning of three major problematic drains / nullahs (Gujjar Nullah, CBM Nullah & Moach Goth Nullah) at the height of torrential rains in Karachi in August 2020. 41 x Excavators, 7 x Loaders, 201 x Dumpers and 234 x individuals (military and civil) were

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employed for cleaning and removal of sludge in order to ensure free and uninterrupted flow of rain water.

- d. **Provision of Relief Items**. NDMA through PDMA, Pakistan Army and Pakistan Navy provided relief items including tents, tarpaulins, blankets, mosquito nets, kitchen sets, water purification tablets, food packs, MREs, medicines and water bottles for flood affected areas in Sindh and GB. NDMA also coordinated humanitarian assistance from UN organizations / INGOs / NGOs for distribution of food and non-food items in flood affected areas of Sindh.
- e. **Deployment of NDMA Assessment Teams**. 3 x NDMA assessment teams were deployed for on-ground assessment and relief coordination in districts of Hyderabad, Badin and Umerkot.
- f. **Establishment of Medical Camps**. NDMA through Pakistan Army and PDMA established medical relief camps and also coordinated with WHO for the provision of medicines in flood affected areas of Sindh. This had been a continuous process and last such camp was established in District Mirpur Khas on 9 June 2021.
- g. **Placement of Steel Bridge**. NDMA coordinated with Headquarters 11 Corps for the placement of steel bridge at Reshun to reconnect Upper Chitral with rest of the province.
- h. **Restoration of Storm Water Drains Project in Karachi**. During Monsoon-2020, unprecedented rainfall in Karachi caused significant damages to communication infrastructure restricting mobility of the residents besides adverse impact on livelihood for days. Restoration work of storm water drains has started with execution of various tasks on three major nullahs by the NDMA as part of Karachi Transformation Plan (KTP).

8. **Lessons Learnt from Monsoon-2020**. Following gaps have been observed during management of floods and associated disasters during Monsoon-2020. These missing links are being kept in focus to develop a corresponding response during management of Monsoon-2021: -

- a. **Lack of Preparation to Deal with Urban Flooding**. Unprecedented rains during Monsoon-2020 especially in Karachi and interior Sindh led



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to urban flooding and water inundated farmland of Sindh. The urban flooding in Karachi could not be managed efficiently owing to absence of fuel for operating high-powered de-watering pumps, lack of training of operators and inefficient sewerage water disposal system. Disproportionate placement of FFE in flood-affected areas was also identified.

- b. **Lack of Resources.** Non-availability of electricity backup system / generators for clean water supply, sewerage disposal system and shortage of fuel for pumping station in urban areas accentuated urban flooding impacts.
- c. **Dumping of Solid Waste.** Dumping of solid waste and building material on banks of various nullahs posed a continuous threat of Urban Flooding. Furthermore, lack of periodical cleaning / de-silting of rivers / nullahs / tributaries / sewage channels aggravated the urban flooding situation in major metropolis.
- d. **Removal of Encroachments.** Encroachments inside flood plains and water channels has always been a major issue in case of release of excess water from dams during flood season. Removal of encroachments from flood plains, especially in District Jhelum, to avoid any threats to Mangla dam infrastructure must be ensured by relevant departments. Furthermore, the capacity of Barakas Nullah, which takes the surplus water from the dam through emergency spillway is also compromised due to extensive construction, requiring immediate clearance.
- e. **Lack of Awareness and Complacency / Negligence by the Locals.** Lack of awareness coupled with negligence / complacent attitude of locals claimed precious lives when locals ventured into nullah / river during flash floods, swimming in flood / rain water / canals and faced electrocution.
- f. **Lack of Coordination Mechanism.** Gaps in coordination mechanism were identified which led to underutilization of response capability in critical areas within provinces / regions. Moreover, need based rescue and relief efforts were undermined due to the duplication of work by relief agencies i.e. government, UN agencies and NGOs / INGOs.

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- g. **Non-Rehabilitation of Left Bank Outfall Drain (LBOD).** Non-rehabilitation / upgradation of LBOD caused damages in Badin, Mirpur Khas and Umarmkot districts, which were badly hit during rains. Lack of maintenance of the drain over the years has made it vulnerable to overflowing its banks. Moreover, canal / bund breaches had also been reported due to lack of regular maintenance work.
- h. **Water Discharge at Shahdara Railway Bridge.** Discharge capacity of Shahdara Bridge has been reduced due to silt deposition and rapid urbanization in flood plains of River Ravi. Although no problem surfaced during Monsoon-2020 but this aspect remains a major concern.
- i. **Unplanned Development.** Unplanned development and newly built communication infrastructure in few areas caused damage to storm water drainage system, thereby causing choking effects on Malir and Lari Rivers and their tributaries particularly in Gujjar nullah, Lath Nadi and Orangi Nullah, resulting into urban flooding in Karachi. In order to avoid recurrence of disaster of such magnitude, Government of Pakistan (GoP) decided to improve civic amenities in Karachi by initiating KTP. The plan is being implemented on fast pace to avoid recurrence of such events in the future.
- j. **Non-Adoption of Standardized Situation Report (SITREP) Format.** In order to compile accurate data, analyse, plan and assist quick decision making, NDMA issued a well deliberated and comprehensive SITREP format. However, the efforts did not yield desired results as PDMAAs did not follow given format for reporting.

Aim

9. To prepare national response guidelines for relevant stakeholders at all levels (national, provincial and regional), to effectively mitigate and deal with flood situations as per contingencies based on Monsoon-2021 forecast and other likely emergencies (drought, locust attack and ongoing COVID-19 Pandemic).

Scope

10. The Plan shall encompass following: -
 - a. **Part I – General Aspects**
 - (1) Responsibility Matrix for Flood Management.
 - (2) Structural Challenges in Response Mechanism.
 - b. **Part II - Flood Threat and Vulnerabilities**
 - (1) PMD's Monsoon Outlook 2021.
 - (2) Perceived Impacts of Monsoon Outlook 2021.
 - (3) Major Conclusions from Monsoon Outlook 2021.
 - (4) Monsoon-2021 Contingencies.
 - (5) Provincial / District Flood Hazards and Vulnerability Matrix.
 - (6) FFD Flood Routing Map (Lag time).
 - c. **Part III - National Response Guidelines for Monsoon-2021**
 - (1) Preparedness Phase.
 - (2) Early Warning.
 - (3) Response - Rescue, Relief & Early Recovery Phase
 - (4) Coordination Aspects.
 - d. **Part IV – Response Guidelines for Drought & Locust Attack**
 - (1) National Response Guidelines against Drought.
 - (2) National Response Guidelines against Locust Attack.

Part I – General Aspects

Responsibility Matrix for Flood Management

11. Responsibility matrix lays down the sequence of actions by various stakeholders in line with their tasks and functions for flood management. The activities under the contingency plan trigger as soon as early warnings / alerts are issued by PMD and FFC based on the weather forecast notified by the PMD through daily press releases. Roles and responsibilities of all relevant stakeholders have been clearly laid down in the contingency plan. Table-2 represents the sequence of actions by different stakeholders and the overall paradigm of responsibility matrix.

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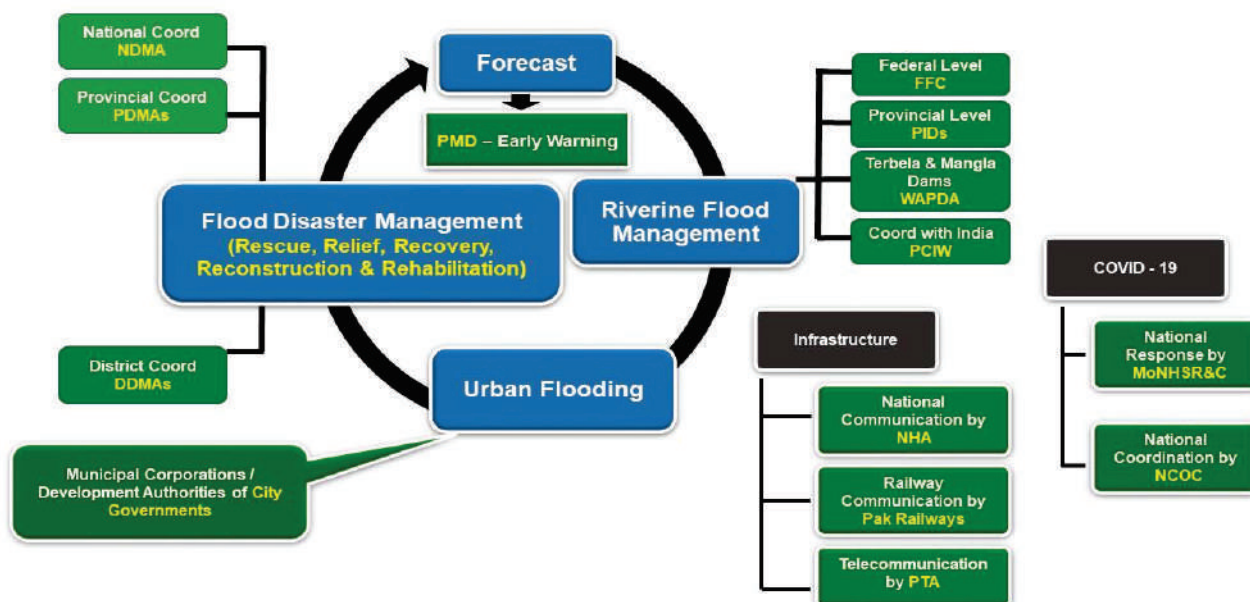


Table-2 – Responsibility Matrix for Flood Management

12. To deal with the challenges of flood management, the responsibility matrix of national and provincial departments is as under: -

a. **Weather and Flood Forecast**

- (1) **Pakistan Meteorological Department (PMD)**. Weather forecast.
- (2) **Flood Forecasting Division (FFD) of PMD**. Flood forecast.

b. **Flood Management & Fighting**. Flood management means regulation of flood through dams, hydraulic structures, flood canals and flood protection works including flood fighting against accidental breaches. The responsibilities are: -

- (1) **Riverine Flood / Flash Flood / GLOF**
 - (a) **Federal Flood Commission (FFC)**. National coordination.
 - (b) **Provincial Irrigation Departments (PIDs)**. Provincial coordination.
- (2) **Municipal Corporations / City Development Authorities / Local Governments**. Urban flooding.

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- (3) **Water and Power Development Authority (WAPDA)**. Effective and timely management of Dams.
- (4) **National Transmission and Dispatch Company (NTDC)**. Management of transmission lines.
- c. **Flood Management (Rescue, Relief, Recovery, Reconstruction & Rehabilitation)**. Covering pre, during & post flood activities as following:-
 - (1) **NDMA**. National level coordination and response.
 - (2) **PDMA's / SDMA / GBDMA / ICT DM Cell**. Provincial / regional level coordination and response.
 - (3) **District Governments/Administrations/ CDA (ICT)**. District level coordination and response.
 - (4) **Pakistan Armed Forces/ Civil Defence/ Rescue 1122 and other humanitarian response agencies**. Emergency response in support of national / provincial efforts.
- d. **Pakistan Commission for Indus Water (PCIW)**. Coordination and timely provision of flood discharge data from India.
- e. **Pakistan Telecommunication Authority (PTA)**. Maintenance / restoration of telecom infrastructure and transmission of SMS alerts for communities.
- f. **National Highway Authority (NHA)**. Maintenance / restoration of National road infrastructure.
- g. **Communication and Works Departments of Provinces / Azad Jammu & Kashmir (AJ&K) / GB**. Maintenance / restoration of respective provincial and rural access road infrastructure.
- h. **Pakistan Railways**. Maintenance / restoration of railways communication infrastructure.
- i. **SUPARCO**. Pre, during and post-flood overall situation and damage assessment using satellite technology.
- j. **Ministry of National Health Services, Regulations and Coordination (MoNHSR&C)**.
 - (1) Preparation and provision of SOPs for COVID-19 during Monsoon emergencies.

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- (2) To ensure deployment of health service providers, availability and provision of medical healthcare facilities.
 - (3) To activate public health emergency, preparedness and response centre.
- k. **National Command and Operation Centre (NCOC)**
- (1) To ensure preventive measures against COVID-19 during Monsoon.
 - (2) NDMA, PDMA, and districts to maintain regular contact with NCOC and provide input in a timely manner regarding incidents of COVID cases during emergencies.

Structural Challenges in Response Mechanism

13. Critical limitations in current response mechanism against flood hazards are to be kept in sight by all the stakeholders while planning and preparing respective flood response plans: -

- a. **Meteorological Predictions and Flood Forecasting System.**
Prediction capability of medium to long range forecasting is only applicable for 7-15 days, whereas seasonal weather prediction has 65-70% accuracy levels. There is non-availability of telemetry / early warning system for flash floods in hill torrents of South Punjab, KP, Balochistan, AJ&K and GB which impacts on early warning / response time for communities.
- b. **Functioning of District Disaster Management Authorities (DDMAs).**
In most of the provinces, dedicated human resource has not been posted in DDMAs, the most important and most critical response tier. The gap at this critical tier causes an immediate pull on national level resources especially Pakistan Armed Forces. This limitation reduces working efficiency of DDMAs.
- c. **Inadequate Capacity to deal with Urban Flooding.** Intense rain coupled with encroachment in drainage system may lead to urban

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flooding in major cities especially Karachi, Lahore, Rawalpindi, Peshawar, Hyderabad etc. Inadequate land-use planning, unplanned expansions, inadequate capacity like shortage of high-powered de-watering pumps and inefficient drainage / water disposal system add to the challenges of urban flooding. Pre-Monsoon removal of encroachments and desilting of nullahs / drains needs urgent attention. Such encroachments and blockage of sewerage drains and nullahs pose a serious threat of urban flooding in future as well.

- d. **Non-Availability of Dedicated Aviation Assets for DM.** Aviation assets of Armed Forces and Ministry of Interior are employed for rescue and relief efforts as helicopters of Pakistan Navy and Pakistan Air Force are normally not employed in northern areas. Aviation assets of Pakistan Army are extensively employed in security operations as well and therefore, these limitations have pronounced bearing on initiation of timely disaster rescue and relief activities.
- e. **Non-Availability of Heavy Earth Moving Machinery.** Non-availability of sufficient number of heavy earth moving machinery remains a hindrance in hilly / mountainous regions of the GB, KP, Balochistan & AJ&K. The challenge gets more compounded during bad weather conditions involving long distance movements.
- f. **Encroachments in River Plains.** Permanent settlements and encroachments in the river flood plains and drainage system of major cities is a constant challenge for rescue and relief efforts during Monsoon emergencies.
- g. **Enactment of River Act.** After 18th amendment, river management falls under the jurisdiction of provinces. Punjab and KP have already enacted River Act, whereas, enactment of the same is under deliberation in other federating units. FFC being responsible for the subject has been directed to get the Federal Rivers Act passed at priority.
- h. **Social and Cultural Norms Inhibiting Disaster Response.** Local residents generally resist evacuations till the very last moment and

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demand relief on site instead of at planned relief camps which increases quantum of rescue and relief efforts.

- i. **Risk Assessment / Multi Hazard Vulnerability Risk Assessment (MHVRA)**. There is a dire need to undertake a detailed hazard and risk assessment, preparing hazard atlas of Pakistan. In view of the same, it has also been observed that efforts for the same are being duplicated at federal and provincial levels which is being coordinated at the national level by NDMA.
- j. **Standardized Emergency Response Services**. Though establishment of Rescue 1122 has proven its utility in provision of timely emergency services and DM; however, there is a need to standardize response services elements like equipment, mobility and training curriculum across the country. Revitalization of emergency services can substantially add to DM capacity of the provinces.

Part II – Flood Threat and Vulnerabilities

PMD's Monsoon Outlook 2021

14. PMD's Climate Outlook for Monsoon-2021 (July – September) has predicted **near normal rainfall during July – September 2021** in Pakistan. The prevailing ENSO phase is expected to be neutral. The Indian Ocean Dipole (IOD) forecast is in neutral phase, but will increase significantly by the end season. (*Source: PMD Outlook for Monsoon 2021*)

15. Based on the global and regional circulation patterns, Seasonal Monsoon Outlook (July – September 2021) is as under: -

- a. Near normal rainfall is expected in Pakistan.
- b. The Eastern and upper half of Punjab, Eastern Baluchistan and Kashmir are likely to receive moderately above normal rainfall, while in Sindh slightly above normal rainfall is expected during the season.
- c. Average normal rainfall of Pakistan during Jul – Sep is 140.8 mm.

Note: Keeping in view the rapid changes in climate system dynamics, above outlook will be updated on monthly basis during first week of each month – PMD



Perceived Impacts of Monsoon Outlook 2021

16. Under the influence of predicted climatic conditions the following impacts have been envisioned: -

- a. Flash flooding in hill torrents of Punjab, AJK and KP, also urban flooding in major plain areas of Punjab, Sindh and KP cannot be ruled out.
- b. Due to extreme hydro-meteorological events over catchment areas are likely to generate riverine floods in major rivers.
- c. Above normal temperature in high altitudes are likely to increase rate of snowmelt thereby increasing the chances of base flow in the Upper Indus basin.
- d. Sufficient water availability for irrigation and power sector will have good impact.

Major Conclusions from Monsoon Outlook 2021

17. Considering PMD's outlook for Monsoon-2021, impediments of existing response mechanism, past experiences and predominant factor of global climate change, following has been concluded: -

- a. The forecast is broad based, predicting possibility of riverine floods, urban floods, dust / thunderstorms, heatwaves and drought in the country which calls for a "**Comprehensive Response**" against all eventualities.
- b. Normal to moderately above normal rainfall with seasonal high humidity and occasional heatwaves is likely in most parts of the country during the period.
- c. High temperatures creating snowmelt coupled with probability of heavy localized rains may generate flash floods in mountainous areas of KP, AJ&K and GB leading to landslides, besides flash floods and hill torrents in D.G. Khan and Rajanpur areas in Punjab.
- d. Flooding in nullahs flowing in North-East of Punjab may cause urban flooding in nearby metropolis.
- e. Due to erratic behaviour of Monsoon, extreme rainfall events like torrential rains, cloudbursts, landslides, GLOF may render vulnerable areas isolated resulting into shortage of basic commodities i.e. food stuff and

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medicines etc. This entails strategic placing of earth moving machinery along with food stocks, medicines and POL in such areas.

- f. Cumulative effect of riverine, flash and urban floods in areas vulnerable to all three flood hazards cannot be ruled out. Hence, the need to configure correct response in such regions / areas becomes imperative.
- g. Possibility of extreme weather events in catchment areas of eastern rivers vis-à-vis identified limitations of own hydro-meteorological forecasting capability may limit early warning time, hence, need to have sound safeguards for flood management. In addition, Pakistan Commissioner for Indus Water (PCIW) should update timely information of eastern rivers to all the concerned authorities.
- h. Availability of water will be sufficient in Dams for irrigation and power sector.

Monsoon-2021 Contingencies

18. **Common Possibility.** Collective effect of Monsoon rains, hydrological discharge of glacier melt, skewed management of major water reservoirs, indifferent regulation of eastern rivers water and choking of sewerage channels in major cities can result into low level riverine flood, flash flood in hill torrents, landslides, avalanches, GLOF in areas vulnerable to such hazards, while causing urban flooding in metropolis.

19. **Visualized Contingency Scenarios.** Monsoon visualised contingency scenarios derived from PMD's Outlook for Monsoon-2021 are as under: -

- a. **Scenario-1 (Most Likely) – Normal to Near Normal Monsoon Rains.**
Normal to Moderately above normal rains to occur in most parts of the country coupled with higher temperatures may lead to one or more systemic extreme events such as heatwaves and heavy to very heavy downpours. It may unfold as under: -
 - (1) Moderately above Normal Monsoon rainfall to occur in eastern and upper half of Punjab, eastern Balochistan and Kashmir while slightly above normal rainfall is expected in Sindh.

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- (2) Heavier rainfall in hilly / mountainous areas of the country may lead to flash floods and landslides. Landslides may cut-off road access to areas of KP, GB and AJ&K.
 - (3) Occasional heavy downpours / extreme events in Lahore, Sialkot, Gujranwala, Faisalabad, Rawalpindi and Karachi which may generate urban flooding. It is important to note that heavy downpours in Karachi though not forecasted, may complicate on-going work on KTP.
 - (4) Riverine flooding may occur due to torrential rainfall over the catchment areas of Rivers Chenab, Jhelum and Kabul.
 - (5) Heavy flows in River Chenab may lead to flooding in related Nullahs Aik, Deg & Palku, Nandipur and Marala-Ravi Link Canals.
 - (6) Occasional heatwaves may occur at plain areas and metropolises during the 1st half of season and drought intensity may be aggravated in Western Balochistan.
 - (7) Higher temperatures may lead to increased glacial melt and risk of GLOF in mountainous areas of KP, GB and floods in Upper Indus Basin.
 - (8) The combination of glacial melt, torrential rainfall in catchment areas and above normal rainfall in Upper KP may lead to earlier filling of Tarbela Dam.
 - (9) Rain in catchment areas of Kashmir would lead to excessive water in Mangla.
- b. **Scenario-2 (Probable) – Intense Monsoon.** This probable scenario may consist of events where-in very heavy downpours coupled with higher temperatures, unpredictable release of water from Indian Reservoirs along with forced release of water from Tarbela and Mangla Dams. It may unfold as below: -
- (1) Extra ordinary flood conditions triggered by extreme events.
 - (2) High water storage level in major reservoirs.
 - (3) Urban flooding due to heavy downpours in short time-span.

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- (4) Peak flood conditions may exist particularly in eastern rivers affecting areas of Punjab and Sindh.
 - (5) Common possibility (Urban flooding, landslides, flash floods & GLOF) emerges as a phenomenon in cities / regions prone to such hazards.
- c. **Scenario-3 (Less Probable) – Erratic Monsoon.** Due to the effects of climate change on Monsoon system, erratic rainfall patterns in combination with increased temperatures may lead to sporadic and isolated heavy to very heavy downpours, heatwaves and increased effects of drought-like conditions. Overall rainfall to remain below normal. It may unfold as below:-
- (1) Occasional heavy downpours to occur in Lahore, Gujranwala and Rawalpindi Divisions which may lead to urban flooding and overflow of irrigation channels.
 - (2) Higher temperatures lead to increased glacial melt resulting in increased river flows into Tarbela Dam.
 - (3) Heatwaves to occur in plain areas and heavily urbanised areas of the country.
 - (4) High temperatures to increase water requirement of kharif crops.
 - (5) Intensity of drought-like conditions to increase in areas already affected areas / at-risk areas, i.e. West Balochistan.
- d. **Scenario-4 (Most Dangerous) – Abnormal Monsoon**
- (1) Combination of Scenario 1, 2 & 3, akin to Super Floods of 2010.
 - (2) Extraordinary flood conditions triggered by some extreme events.
 - (3) High water levels in major water reservoirs.
 - (4) Common possibility (Urban flooding, landslides, avalanches, flash floods & GLOF) emerges as a more frequent and recurrent phenomena to a high degree in cities / regions prone to such hazards.

Provincial / District Flood Hazards and Vulnerability Maps

20. Provincial / district hazard maps are essential part of preparedness. These maps are created on the basis of historical data of affected areas, extent of damage, population density and housing units. It indicates different hazard zones (Very High, High, Medium, Low and Very Low) that have been identified after the analysis, showing the level of hazard in an area. Monsoon hazard maps of provinces / regions are attached as **Annex B – F**.

FFD Flood Routing Map (Lag time)

21. FFD revised Flood Lag Times on the basis of 30 years data from 1990 – 2020 and changed morphology for improvement of the national flood management system. Flood routing model is attached as **Annex G**.

Part III – National Response Guidelines for Monsoon-2021

22. National and provincial response guidelines for the Monsoon contingency scenarios are as per the Monsoon Outlook 2021 generated by PMD, comprising different phases, which are covered in following paragraphs.

Preparedness Phase

23. **Major Actions before Monsoon**. Following measures are likely to infuse refinement in response mechanism: -

- a. **Resource Mapping**. Resource mapping of respective regions and its timely intimation to NDMA.
- b. **Placement of Earth Moving Machinery**. Placement of earth moving machinery in vulnerable mountainous districts of AJ&K, GB & KP for timely clearance of roads / landslides.
- c. **Special Conferences**. Special conferences by relevant stakeholders on occurrence of any extreme events will assist timely decision making process.

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- d. **Provision of Timely Information.** PDMA's to ensure timely provision of information regarding incidents and response. PDMA's to make use of NDMA's standardized SITREP format, which is attached as **Annex H**. Moreover, mechanism of incident reporting has to be made more efficient and timely.
 - e. **Updation of Database.** DDMA's to update miscellaneous data which may be needed during disaster response, e.g., database of volunteers, miscellaneous resources etc.
 - f. **Innovative Use of Modern Technology.** DDMA's and communities should be encouraged for innovative use of modern technology and gadgets for disaster response.
24. **Protective Measures Against Riverine and Urban Flooding.** Following protective measures based on past experiences will help to mitigate disaster / losses:-
- a. Identification of low lying areas prone to pondage / inundation in congested areas of metropolis.
 - b. Preparation of hazard maps of major cities against urban flooding based on recorded history for sensitization, awareness, early warning and evacuation of vulnerable communities.
 - c. Capacity building of Municipal Corporations with priority to Municipal Corporations of mega cities. Attention must be given to availability of requisite number of heavy duty de-watering pumps and generators at most vulnerable areas of city centres.
 - d. Widening, dredging and de-silting of water / sewerage drains.
 - e. Removal of encroachments along the flood plains and sewerage drains, thus reclaiming original extents of such drains.
 - f. Serviceability and operability of pumping stations.
 - g. Provision of backup electricity arrangements in the form of generators for sewage disposal / pumping stations.
 - h. Establishment of committee for planning and implementation of contingency plans at municipal level especially in cities like Karachi, Lahore and Rawalpindi.

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25. **Protective Measures Against Flash Flood.** In the past, majority of losses occurred due to flash flooding in Monsoon 2016, 2017, 2018, 2019 and 2020. Following protective measures based on past experiences will help in mitigating losses from flash floods: -

- a. Awareness drive of recorded flash flood history in regions prone to such hazards.
- b. Signposting of waterways in local language with known flash flood history. It should clearly demarcate threat level of waterways preventing any misadventure by public to crossing.
- c. Long term planning for rehabilitation of population under threat of flash floods.
- d. Special community bases vigilance to be exercised during dark hours and periods of intense rains by using sirens or announcement on loud speakers of mosques.
- e. Giving priority to commissioning of emergency services like Rescue-1122 in mountainous inaccessible districts. As an interim measure, forward displacement of emergency services and relief stores may be planned.

26. **Protective Measures Against GLOF**

- a. **Civil Engineering Interventions.** To prevent the lake outburst, following civil engineering interventions may be considered: -
 - (1) Prevent over topping of the lake water and strengthen moraine dam by concrete cementing, gabion wall etc.
 - (2) Keep volume of stored water in the lake to a safe level; initially by dropping the level and then by excavating a tunnel or deepening the breach of the moraine-dam to retain the lower level through any one of the following: -
 - (a) Siphon system.
 - (b) Electrical pumping.
 - (c) Controlled blasting of the moraine-dam.
- b. **Other Interventions.** GLOF carries huge potential energy after its occurrence and thus its impact will always be challenging to manage.

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Some of the mitigation measures against GLOF downstream of a glacier lake without direct engineering intervention to the lake itself are enumerated below. The mode is not aimed to prevent the lake outburst but to mitigate the GLOF hazards: -

- (1) Preparation of a hazard map.
- (2) In order to predict and understand GLOF on its occurrence, evaluation of possible hydro graph along water channel downstream.
- (3) Placing of round the clock monitoring and early warning system at identified GLOF sites.
- (4) Construction of adequate trapping dams with capacity to dissipate the GLOF impact.
- (5) Strengthening infrastructures to make these robust enough to resist GLOF destruction.
- (6) Measures to timely disseminate information to the vulnerable populace.
- (7) Rehearsal / contingency planning to shift vulnerable communities to safer places.

27. **Protective Measures Against Landslides / Avalanches.** Threat of landslides / avalanches in vulnerable areas underscores outlook of impending Monsoon-2021. It merits for reappraisal of basic precautionary measures such as: -

- a. Refresh recorded history of landslides / avalanches prone areas. Besides vulnerability risk assessment; personal experience of notables of such areas can also prove beneficial.
- b. Local communities of vulnerable areas be sensitised to pay special attention to weather forecasts / alerts as heavy rains can trigger landslides / avalanches. Sudden temperature variability has the potency to trigger avalanches in vulnerable areas.
- c. Community based early warning system as part of response mechanism be instituted in landslide / avalanche prone areas by nominating local notables to ensure that alerts are timely disseminated. Measures may

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include use of watchmen, loudspeakers / megaphones, whistles, SMS alerts, telephone and any other arrangements of similar nature.

- d. Based on landslide / avalanche alerts issued by PMD, local administration may consider precautionary closure of roads / tracks to avalanche / landslide prone areas and evacuation to safer places as a contingency planning.

28. **Protective Measures against Cyclones**. Although the cyclone season is over and recently a cyclonic storm “TAUKTAE” formed a depression over Southeast Arabian Sea at a distance of 1640 km southeast of Karachi; however, owing to rapid changes in temperatures, the possibility of such events to occur frequently cannot be completely ruled out. Therefore, following guidelines can help / protect people in vulnerable areas:-

- a. **Before Cyclone Advisory**

- (1) Surroundings of houses should be clear of any long hanging tree branches, large bushes and loose debris / waste i.e. garbage, lawn chairs / tables, potted plants etc., which can become airborne and cause injury / damage.
- (2) List of local emergency services contact numbers be maintained at all times.
- (3) An emergency kit may be prepared which shall include adequate food stuffs and drinking water etc.
- (4) Tune into your local television or radio station to keep abreast with the developing situation.
- (5) Removal of billboards.

- b. **After Cyclone Warning**

- (1) Vehicles be parked under a solid shelter.
- (2) Close windows and shutters or place plastic sheeting on all windows around houses.
- (3) Remain indoor and tuned into your local television or radio stations for up-to-date information.

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- (4) Turn off main electrical power, gas & water supplies before evacuation.
- (5) Evacuate to nearest safe zone or high ground.

c. **When Cyclone Strikes**

- (1) Stays indoors and away from windows.
- (2) If your home starts to break apart, protect yourselves under mattresses, carpets / rugs, blankets or under a strong table.
- (3) Beware that if the wind drops, don't assume that cyclone is over, you may be in the "Eye of the Cyclone", violent winds will soon resume. Wait for the official all clear from emergency services / district administration.
- (4) Check your home for any gas / water leaks.
- (5) Do not use electrical appliances if your home is flooded or if you are wet.
- (6) Beware of damaged power lines, bridges, buildings, trees and don't enter flood water.

Early Warning Phase

29. **Early Warning by Government Agencies.** PMD will be the focal organization for providing flood early warning. No other agency is allowed to issue any forecast on weather / flood. Only PMD's alert will be relayed by stakeholders: -

- a. FFD, subordinate department of PMD will disseminate Daily Flood Forecasts during the Monsoon season.
- b. Weather and flood forecast / advisory will be issued as per following schedule: -
 - (1) **Normal Conditions**
 - (a) Monthly - First week of the month.
 - (b) Weekly - Every Monday.
 - (2) **Onset of Floods**
 - (a) Normal - Every 24 hours.

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- (b) High / Very High - 6 hours.
 - (c) Significant Event - Every hour.
 - (d) Extreme Event - Minimum permissible time before occurrence.
- c. Specific weather advisory / warning / flood alerts will be issued by respective PDMA's to disseminate warning to district authorities / relevant stakeholders via **Fax / Email / Telephone / SMS / WhatsApp Message** and immediately upload on their website.
- d. NDMA and PMD will also release breaking caption / news or tickers to TV stations including the national TV station. Moreover, PMD has also constructed a fully-equipped studio for TV broadcast in its own building. Radio broadcasts will also be used from national and FM radio stations to keep the public aware of any upcoming disaster and related advisories.
- e. Important advisories / alerts will also be shared on social media (Twitter, Facebook) through official accounts of government agencies.
- f. PMD will nominate a focal person authorized to deal with weather and flood forecast which will be notified to all concerned and will be readily available to all stakeholders, when required.
- g. PMD will also critically analyse contributing factors for drought in arid zone of the country and timely intimate the same to NDMA and other relevant stakeholders.
30. **Community Early Warning**
- a. NDMA will be the focal agency to collaborate with PTA for issuing SMS alerts.
 - b. SMS will be drafted by respective PDMA's and forwarded to NDMA, 24 hours in advance. Same SMS will be displayed on website of NDMA / PDMA's and shared with media.
 - c. Public Service Messages (PSMs) through print / electronic media must be generated forthwith by PDMA's / SDMA / GBDMA / DDMA's.
 - d. To ward off panic and improper response, SMS will be tehsil / city specific.

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- e. Bill-boards, posters, banners, brochures, warning signs, and flood-water levels may be used to educate / warn people of at-risk areas.
- f. All concerned departments and local communities must be apprised about the forecast and it's likely unfolding at the onset of Monsoon.
- g. Community must be informed about safer places, relief camps and evacuation plans by concerned departments.
- h. To ward off "**False Warning**", all Disaster Management Authorities will ensure implementation of Clause 35 of NDM Act 2010.
- i. Community based indigenous early warning system must be institutionalized as part of response mechanism in areas vulnerable to flash floods, landslides, GLOF and avalanches by following means:-
 - (1) Placing of round the clock lookouts especially at night or during the period of intense rain.
 - (2) Use of sirens or announcements on loud speakers of mosques.
 - (3) Lightening of fire and drum beating by the people living at higher places in such areas.
 - (4) Practicing of evacuation drills.

Response – Rescue, Relief and Early Recovery Phases

31. **Tiers of Response**. The national contingency response plan have been evolved keeping in mind the structural challenges in response mechanism and experiences of past floods. National sphere of Monsoon response will comprise of following tiers: -

- a. **1st Tier**. Local emergency response by DDMA's with the support of district / provincial / Armed Forces resources.
- b. **2nd Tier**. Provincial effort in support of district authorities.
- c. **3rd Tier**. NDMA response (national efforts / national resources) in support of Province (s), GB, AJ&K and ICT with / without external assistance.



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32. DM Planning

- a. PDMA's to ensure resource mapping of volunteers (Civil Defence, Pakistan Red Crescent Society (PRCS), Boy Scouts, Girl Guides), UN Agencies, NGOs / INGOs and ambulances at district level.
- b. Coordination must be carried out with Civil Defence, Pakistan Boy Scouts Association and Pakistan Girl Guides Association at district level to provide support at various relief camps under the overall guidance and supervision of the district administration.
- c. Location of relief camps must be earmarked and necessary administrative arrangements be made accordingly. It must be incorporated on past experiences and should be need based. Relief camps should be accessible / closer to main arteries so that relief goods are easily delivered to the affected people.
- d. Fool proof measures be planned against rains / flash floods in relief camps established for Temporarily Displaced Persons (TDPs).
- e. Resource Mapping and prepositioning of dedicated earth moving machinery at landslide / flood water erosion prone highways / link roads and isolated mountainous areas of KP, AJ&K and GB by respective Governments. NHA, respective Communication and Works Departments and other relevant organizations to ensure such arrangements alongside Bailey Bridges and enhanced number of maintenance teams at all critical sections especially following: -
 - (1) Fatehpur to Kalam (N-95) Road.
 - (2) Karakoram Highway (KKH).
 - (3) Balakot to Jalkhad to Chilas (N-15) Road.
 - (4) N-5 Road.
 - (5) Kohala to Muzaffarabad (S-2) Road.
 - (6) Abbottabad to Murree Road in Galiyat.
 - (7) Islamabad to Murree to Kohala (N-75) Road.
 - (8) Gilgit – Skardu (S-1) Road.
 - (9) Muzaffarabad to Chakothei (S-3) Road.

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- (10) Sukkur to Jacobabad to Dera Allah Yar (N-65) Road.
 - (11) D.I. Khan to Mughalkot (N-50) Road.
 - (12) Muzaffargarh to D.G. Khan to Sakhi Sarwar (N-17) Road.
 - (13) Dir to Chitral (N-45) Road.
 - (14) Khawazakhela to Besham (N-90) Road.
- f. Flood Contingency Plans be updated by all concerned based on NDMA's National Monsoon Contingency Plan 2021 as well as respective SOPs of planning process. The same be shared with NDMA and relevant stakeholders immediately.
- g. To identify most vulnerable communities for sensitization, awareness, early warning and evacuation in emergency, district hazard maps must be updated down to the union council level by focusing on the following points:-
- (1) **Riverine Floods**. Settlements (encroachments) inside river plains (kacha area), communities living close to river banks / vulnerable sections identified by respective irrigation departments.
 - (2) **Flash Floods**. Settlements closer to / inside water courses.
 - (3) **Landslides / Avalanches / GLOF**. Communities residing near dangerous slopes / potential landslide areas in mountainous regions.
 - (4) **Urban Flooding**. Low lying areas prone to inundation in congested city centres.
- h. Planning for the needs and concerns of vulnerable groups be made on the basis of available authenticated gender, age and disabled disaggregated data at district level.
33. **Flood Protection Works**
- a. Inspection of all flood protection works, embankments and bunds including all vulnerable points and structures be carried out with requisite marking at all bridges / structures embankments.
 - b. Damaged bunds be repaired and shortage of pitching store reserves be recouped, pre-positioned at a safer place. Repair and maintenance of left over flood protection works should be completed by 30 June 2021.

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- c. Round the clock vigilance of vulnerable sections of flood protection structures / bunds, identified by respective irrigation departments will be ensured through irrigation staff, police, civil defence and local community volunteers. Incomplete flood protection works, if any, will be particularly kept under special watch by respective PIDs / PDMAAs / DDMAAs.
- d. SOP on breaching of bunds must be rehearsed / practiced in presence of all stakeholders. Breaching sections be kept well demarcated, necessary explosives be kept ready for which close liaison be made amongst all stakeholders.
- e. During the flood season, critical bridges be kept under special focus and may be patrolled. Detailed inspection of all the bridges, especially the flood openings should be carried out in order to ensure that choked waterways have been cleared.
- f. Addresses and telephone numbers of the controlling authorities / departments having earth moving machinery should be kept readily available. Besides, a liaison with all the departments / agencies possessing such machinery should be made well in advance so that their machinery could be obtained on a short notice during emergency.
- g. Adequate number of shallow type spans and pitching stores should be kept readily available by Pakistan Railway at an appropriate place for use in case of emergency.

34. **Flood Rescue Measures**

- a. Availability and serviceability of flood rescue equipment (Boats, OBMs etc) will be ensured by all concerned. The equipment will be strategically placed so as to respond to flood contingencies in different regions.
- b. Availability of trained OBM operators must be coordinated and ensured during entire Monsoon season.
- c. Readiness of Urban Search and Rescue (USAR) teams will be ensured for rescue operations in collapsed buildings / landslides in respective province or other provinces (when requisitioned).
- d. Employment of Pakistan Army USAR team will also be coordinated through NDMA.

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- e. Demand of Pakistan Army for flood fighting equipment has already been rationalized. PDMAs to ensure provision of rationalized flood fighting equipment demand of Pakistan Army before onset of Monsoon-2021. A mechanism be mutually devised by all PDMAs and Pakistan Army for its collection / utilization and maintenance as per requirement.
- f. Availability of staff of all relevant departments especially hospitals and other emergency services on holidays must be ensured during Monsoon.
- g. Rescue 1122, emergency services, civil defence, volunteers and police / law enforcement agencies will be incorporated during rescue operations.
- h. Aviation effort should be requisitioned through NDMA by respective Provincial Governments and AJ&K. Expenditures will be borne by respective province / region.

35. **Dams Operations**. There must be an intimate coordination as per revised instructions / SOPs of dam management with all stakeholders so that response is generated well in time. Coordination conferences must be held before 30 June 2021. Effective coordination must be done amongst members of Flood Management Committee (FMC) of Mangla Dam after reservoir level of 1232 feet.

36. **Salient Preventive Measures during Monsoon**

- a. Landslides prone areas, hill torrents, seasonal nullahs and river plains must be identified by local communities with the ability to shift immediately to safer places, in case of emergency.
- b. A bag containing important utility items like first aid medicines, dry ration, water, charged torch, radio set, mobile phone, cells, match box, candles, charged batteries, mosquito repellent / net, important documents including CNIC and some cash money should always be readily available.
- c. Preventive measures against infectious / skin diseases and cholera etc must be taken and vaccination done at first instance.
- d. Animal vaccination along with arrangements of fodder be kept in sight.

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37. Rescue Operations

- a. Forced evacuation must be planned in case of limited warning time, by utilising all available resources at provincial / district levels.
- b. DDMAAs as first responders should mobilize communities for disaster response. This will encourage community involvement, strengthen their own efforts and also address the issue of absence of human resource.
- c. Priority in rescue / evacuation will be given to vulnerable groups (age, disabled, women and children).
- d. NHA and Pakistan railways will restore the communication infrastructure / alternate routes, as early as possible.
- e. SUPARCO will provide satellite imageries and assessment for projected development of floods in affected areas to NDMA.
- f. Traffic arrangements be made for regulating traffic on national and provincial arteries in case of damage to infrastructure by floods.
- g. Disaster tourism must be curbed.
- h. Extra vigilance may be undertaken in all rescue operations due to COVID-19 pandemic by all concern departments.

38. Parameters for Flood Rescue Equipment. Need based rationalization of the quantity of rescue boats and type of OBMs is to be done based on factors mentioned below to configure optimal response against envisaged flood threat with availability of sufficient reserves at required tier of response: -

- a. Respective provinces are responsible for establishing the requirement of boats vis-à-vis threat of flood / vulnerability / exposure / risk assessment. All supporting agencies have to maintain the capability based on the need of the provinces.
- b. Districts must be prioritized as High Threat (Priority-I), Medium Threat (Priority-II) and Low Threat (Priority-III) based on following aspects: -
 - (1) Historical flood data record especially last 20 years flood events.
 - (2) Population density.
 - (3) Urban / rural divide.
 - (4) Type of flood threat i.e. riverine, flash, urban etc.

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- (5) Degree of vulnerability and exposure e.g. population centres in water ways / proximity to rivers.
 - (6) Reaction time.
- c. Standard size of rescue boat will be 19 feet for fibre glass boats.
- d. Maximum number of passengers carried by a fibre glass rescue boat should be 12 persons (5 on either side) and two crew members at the back. While for a M2 Pontoon (2 x boats joined) of Army, it will be 20 persons including two crew members. For a 9 feet pneumatic boat, it will be 8 – 10 persons including crew members.
- e. Response action will have following sequence: -
- (1) **1st Tier – Immediate Response (Maximum One Hour)**. By District Administration through Rescue 1122 (if held), Police or trained Volunteers (if held), Civil Defence.
 - (2) **2nd Tier – Build Up Response (4 – 6 Hours)**. By Armed Forces / Civil Armed Forces, when requisitioned. Alongside, PDMAs may shift the resources of respective province from other less threatened districts.
- f. **Positioning of Rescue Boats**. The location of rescue boats will be decided based on following aspects: -
- (1) Availability of reaction time vis-à-vis flood warning, transportation time to water line and mobilization time of crew.
 - (2) Road communication infrastructure vis-à-vis threat of isolation in case some roads are cut or traffic jams deny transportation in time.
 - (3) Time required for build-up in shifting of resources.
- g. **Priority of Districts**. The priority will be established by respective provinces after due deliberation / consultation and shared with all stakeholders for standardized planning: -
- (1) **Priority – I Districts (High Threat)**. These districts should be historically affected by floods (riverine / flash) and situated

alongside rivers, Nullahs and hill torrents with relatively higher number of population.

- (2) **Priority – II Districts (Medium Threat)**. These are medium priority districts, historically less affected by any type of floods with relatively low number of population.
- (3) **Priority – III Districts (Low Threat)**. These are low priority districts, historically least affected by any type of flood and with relatively lesser number of population.

h. **Concept of Employment of Rescue Boats**

- (1) Fibre Glass / M2 boats will not be operated at “Peak flood” currents in the mid-stream of a riverine flood as it may endanger the life of crew and persons being evacuated. In such cases boat operations will be in the peripheral areas where water current may permit boat operations.
- (2) Boats will not be used in hill torrents with fast currents or shallow water and boulders underneath.
- (3) Pneumatic boats will be used in relatively shallow water channels with low water currents and aquatic undergrowth.
- (4) Low power OBM operated boats will be used in urban centres against urban flooding along with oars.
- (5) Mix of low, medium and high powered OBMs will be maintained based on type of area, river and operational dictates.
- (6) During planning for flood rescue operations, the areas for employment of Armed Forces will be earmarked for coordination and clear demarcation of responsibilities / operational orientation. Within Armed Forces, in Sindh Province, the districts must be deputed to Army and Navy.
- (7) The calculation of life jackets will be based on the number of boats @ 12 life jackets per boat. Minimum 20% reserves will be calculated for life jackets.
- (8) PDMAs may maintain their central reserve stock on regional basis as per requirement / threat assessment to release the same to district administration or Armed Forces.

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39. **Relief Operations.** All stakeholders should incorporate NDMA's Guidelines on Multi-Sector Initial Rapid Assessment (MIRA), Minimum Standards of Relief in Camp and Ex-gratia Assistance to the persons affected by natural and man-made disasters, in their respective plans. Moreover, special attention may also be given to following: -

- a. A standardized food pack must be designed as per local requirements to meet the needs of affected persons. Energy biscuits and other such food items which are not part of the daily diet of local community, be avoided. Instead items like rice, wheat bags, ghee and milk for babies etc, should be included.
- b. Water purification tablets and filtration systems for the provision of clean drinking water to affected people must be stocked in advance.
- c. Relief management is the most significant part of response to any disaster. The main purpose of the relief management is to provide life sustaining commodities to the affected communities through a fair and organized system, therefore, distribution method should be decided in consultation with local communities.
- d. Based on the past experiences, need must be formalized and the list of relief goods should be available with all DDMA's and displayed on websites to facilitate donors to provide need based relief goods in emergency.
- e. Relief packages should be according to the region's cultural context and food requirements be ensured for lactating mothers, pregnant women, infants, children and elderly persons. Stockpiling and contingency planning should incorporate special needs of older persons and persons with disabilities particularly with regards to special equipment such as wheel chairs etc and must be able to cater for the needs of family, as a whole.
- f. Trained community level teams should assist in planning and setting up emergency shelters, distributing relief among the affected people, identifying missing people and addressing needs of education, health care, water supply, sanitation and food etc of the affected community.

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Relief teams should also engage active women from within the community in distribution of food in the relief camps.

- g. Extra vigilance may be undertaken in all relief operations due to COVID-19 pandemic by all concern departments.
- h. Minimum Initial Service Package (MISP) is an international standard of care which is normally implemented at the onset of every emergency to reduce mortality, morbidity and disability among populations (particularly women and girls) affected by crises. This can be achieved by increasing the provincial and district capacity to implement the MISP during disasters, creating a data bank of trainers and trainings, strengthening the coordination stakeholders for responding in a timely and effective manner.
- i. Emergency preparedness planning within the education sector is a critical step towards ensuring access to quality education for all learners in times of crises. Minimum standards / guidelines on education in emergencies may be put in place to enable continuity of structured learning during disasters.
- j. Dignity of all the affected persons should be especially ensured during relief phase.
- k. Disease early warning system to be put in place by provincial health departments, once a situation arises. National Health Emergency Preparedness and Response Network (NHEPRN) should establish liaison and necessary coordination with provincial health authorities. District and city administration should prepare for Monsoon season in advance by ensuring that **anti dengue, malaria and COVID-19 pandemic** drives commence promptly and spraying and removal of stagnant water is done at priority basis. Health authorities must ensure the stockpiling of medicines, vaccines and availability of mosquito nets in all health facilities and are also placed at lowest possible tier for distribution. Moreover, safety precautions be undertaken regarding social distancing and disinfection of frequently used public areas in case of COVID-19.

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- I. The supply chain of relief goods must be maintained and followed in true letter and spirit. DDMA's are the first tier supported by PDMA's to provide immediate relief. Similarly, second tier (PDMA's supported by NDMA) should be ready to render assistance once the stocks of DDMA's are exhausted. Third Tier of NDMA supported by National resources to extend relief support required by the provinces / regions.
 - (1) NDMA maintains its stocks at strategic locations (**Annex I**). PDMA's are responsible to collect the stocks once released by NDMA from a particular location.
 - (2) NDMA stocks will be requisitioned only in case of extreme emergency and with sufficient reaction time.
 - (3) Distribution of tents at site must be avoided. People must be motivated to come to relief camps.

40. **Relief Goods – Non-Food Items (NFIs)**

- a. Logistics caseloads will be worked out on average relief rendered during flood related hazards for one decade (2011– 2020) in respective districts/ regions / provinces by all PDMA's and ICT DM Cell.
- b. Stockpiling of relief goods (NFIs) on envisaged caseload will be ensured at district level by P/S/GB DMA's, forthwith in accordance with “NDMA Guidelines on stocking, maintenance and supply of relief and rescue items”.
- c. An effective mechanism of supply chain management must be established including prequalified suppliers for provision of food items, relief goods (NFIs) and transport contractors for emergency transportation.
- d. Federating Units including AJ&K and GB must ensure stocking of sufficient quantity of wheat and food items before 30 June 2021 in areas vulnerable to floods and isolation, owing to possible severance of road links.
- e. Pakistan Utility Stores Corporation (USC) will forward resource mapping along with inventory of items, contingency plan including capability of mobile utility stores to NDMA, PDMA and all concerned DDMA's by 30

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June 2021. USC will further ensure maintenance of sufficient stock levels and supply chain to support community in all flood prone areas especially far flung areas of KP, GB, AJ&K and Balochistan.

41. **Early Recovery / Damage Assessment.** MIRA is the first step of the Assessment & Monitoring Framework designed to identify strategic humanitarian priorities including scale of a disaster, priority areas of assistance and identify gaps in disaster response after the onset of natural disasters or complex emergencies. NDMA and UNOCHA has developed MIRA with the aim of sharing common procedures and assessment methodology for needs data collection as under: -

- a. In case of need, MIRA module will be deployed for which PDMA's / DDMA's will be required to provide requisite human resource, trained for the module.
- b. Rapid assessment will be carried out by NDMA / PDMA / UN / INGOs / NGOs to identify needs and priorities of affected and vulnerable communities.
- c. Initial report will be shared with Disaster Management Authorities within one week and final report within two weeks.

42. **Needs & Concerns of Vulnerable Groups.** Following aspects must be kept in special focus during all stages of flood management: -

- a. Relief sites and camps should ensure attention to women's security needs like separate wash-rooms with locks, adequate lights, water and sanitation facilities etc.
- b. Women's fair and equitable access to basic services should be ensured, particularly in health and hygiene.
- c. Female doctors and psychosocial support personnel should be made available for women and children.
- d. Mobile medical units equipped with safe delivery, post-natal facilities and referral should be in place.
- e. Camp management agency should ensure that the registration, profiling and mapping systems record disaggregated data on age, gender and vulnerabilities so as to identify people with specific needs at the earlier stages of entering in the camp site and throughout the duration of camp stay.

Coordination Aspects

43. **Inter Provincial / Regional Coordination**. During management of disasters, inter provincial / regional coordination mechanism can require assistance especially in far flung areas in shortest possible time thus reducing sufferings of distressed population. Information about resources of neighbouring provincial / regional government resources can be more conveniently incorporated in response phase.

44. **Coordination Spectrum**

- a. All stakeholders will monitor flood situation by activation of Emergency Operation Centres (EOCs). EOCs will be activated by NDMA, P/S/G/F DMAs, CDA, Pakistan Armed Forces and all relevant stakeholders as per respective SOPs from 15 June to 15 September 2021, unless Monsoon is prolonged.
- b. All stakeholders including Pakistan Armed Forces, FFC, FFD, PMD, NHA, NHEPRN & SUPARCO involved in flood management will nominate respective Liaison Officers (LOs) for National Emergency Operation Centre (NEOC) by 30 June 2021.
- c. Daily coordination conference will be organized by NDMA during a flood situation in NEOC at 1000 hours. All LOs will attend the conference.
- d. Information about any significant event will be interpreted and shared by PMD with NDMA.
- e. All significant information will be immediately passed to NEOC by respective PDMA.
- f. Facility of a Cloud Based Video Conference System e.g. Google Meet, Microsoft Team, WebEx & Zoom etc. is available at NDMA. Necessary hardware (Cameras) and Software are held with PDMA to connect to the NDMA. Same may be utilized for effective communication during Monsoon-2021. Necessary details of the system are as under: -
 - (1) **Point of Contact (POC):** ICT Directorate NDMA.
 - (2) **Alternate Skype ID:** ndmapk.
 - (3) Prior coordination for setting up of video conference besides its testing is required as per SOP.

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g. Coordination with UN Agencies and INGOs / NGOs

- (1) The support of UN Agencies and INGOs / NGOs will be utilised in a coordinated manner, mostly in preparedness, relief, post disaster assessments and rehabilitation phases.
- (2) The capabilities of each organization must be ascertained to ensure its optimal utilisation.
- (3) Need based employment of UN Agencies will be regulated by NDMA and PDMAAs. Efforts will be made to avoid saturation of such agencies in a particular region.
- (4) NGOs / INGOs duly cleared / approved by concerned ministries will be allowed to assist in relief operations.

45. Reports and Returns

- a. Submission of Daily SITREP to NEOC by PDMAAs / DDMAAs, PMD, FFC, FFD and NHA will be ensured as per already issued NDMA SITREP SOP with effect from 25 June 2021 onwards.
- b. NDMA and PDMAAs will update the situation on respective websites every 6 - 12 hours.
- c. SUPARCO will provide the imageries of developing situations on daily basis.
- d. To ensure a coordinated response, National Humanitarian Network (NHN) / Pakistan Humanitarian Forum (PHF) / UN Agencies and PRCS will share location of their stocks and human resource mapping with NDMA / PDMAAs by 30 June 2021.
- e. Important telephone numbers from NDMA perspective are shared at **Annex J**. All PDMAAs / relevant stakeholders will share telephone directory of respective Provinces / Regions with NDMA and host it at respective website by 30 June 2021.

46. Assistance / Coordination with Ministries / Departments. Following ministries / departments are requested for assistance as mentioned against each: -

- a. Ministry of Defence. Conduct of relief / rescue operations through Pakistan Armed Forces (helicopters, troops & rescue equipment) when required.

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- b. **Ministry of Interior & Anti-Narcotics Force**. Availability of aviation assets for emergency response, at a short notice.
 - c. **Pakistan Electronic Media Regulatory Authority (PEMRA)**. Airing of public service messages for community awareness on all media channels during prime hours.
 - d. **Pakistan Telecommunication Authority (PTA)**. To facilitate generation of SMS alerts for early warning, emergency relief and evacuation to required populace.
 - e. **Pakistan Tourism Development Corporation (PTDC)**. Provision of timely weather / flood related information to tourists including protection from dangers of flash floods, landslides, GLOF etc and help evacuation of stranded tourists through local Government / Pakistan Armed Forces.
 - f. **Ministry of Communication**. To conduct assessment for early restoration of communication infrastructure and remain prepared to shift earth moving machinery to affected areas.
 - g. **Ministry of Railways**. To monitor railway tracks on regular basis and assist transportation of relief goods to affected areas.
 - h. **MoNHSR&C**
 - (1) To prepare and provide SOPs for COVID-19 pandemic and associated waterborne infectious diseases.
 - (2) To ensure availability and provision of medical healthcare facilities.
 - i. **NCOC**. To ensure preventive measures against COVID-19 pandemic across the country.
47. **Requisitioning of Armed Forces**. Armed Forces will be requisitioned subject to provision of rules / regulations by PDMA / DDMA only in case of emergency through NDMA. Aviation support will be coordinated centrally by NDMA based on request of provinces and regions when called to assist in "Aid to Civil Power". Authorities utilizing services from Armed Forces will bear the cost of assets used which will be processed immediately after their employment. Armed Forces will be employed for following: -

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- a. Rescue and relief operations by Field Units of Pakistan Army and Pakistan Navy (Sindh only).
- b. Aviation support including provision of C-130 by Pakistan Air Force (helicopters of only Pakistan Army and Ministry of Interior will be employed in northern areas and AJ&K).
- c. Support of divers of Pakistan Army and Pakistan Navy.
- d. Special search and rescue operations for riverine floods by Pakistan Army and Pakistan Navy.
- e. Medical support teams of all three services.
- f. Search and rescue in urban areas collapsed structures and landslides / avalanches by USAR team of Pakistan Army.

48. **Information Management**

- a. NDMA, P/S/G/F DMAs will update respective websites on 12 hourly basis during entire Monsoon season. In case of a significant activity / event / flood situation, it will be updated on 3 – 6 hours basis.
- b. Print and electronic media / internet be utilized for dissemination of timely and accurate information.
- c. Regular press releases, media tickers and press briefings will be ensured to present real time picture of ongoing activities, developing situations and losses / damages, if any.
- d. To ensure post transmission record as well as redundancy, information will be disseminated through SMS, emails, fax and telephones.
- e. SMS / WhatsApp Groups of relevant stakeholders will be made to ensure real time information sharing.
- f. Mr. Idrees Mahsud, Member (DRR), NDMA is authorized spokesperson of NDMA, his contact no is 0340-6003337 whereas Syed Mushtaq Ali Shah, Chief Meteorologist is a focal person / spokesperson of PMD, his contact no is 0333-5041282 / 051-9250365.

Part IV – Response Guidelines for Drought and Locust Attack

National Response Guidelines against Drought

49. It is pertinent to highlight that Below Normal to near Normal Monsoon in second half may result into drought like conditions in arid zones of South Punjab, Sindh and Western Balochistan. All relevant stakeholders will continuously monitor the situation as per Drought Mitigation Plan Matrix given at **Annex K**. Following additional measures will also be considered: -

- a. In line with envisaged caseloads, food reserves will be maintained.
- b. Caseload for vulnerable groups be planned as per assessment, addressing their needs.
- c. Vulnerability of livestock along with the requirement of fodder and medicines must factor in all plannings and executed in case of need.
- d. Supply of clean drinking water to the vulnerable communities should be given top priority through available resources, while, provision of bottled water may also be considered as a last resort.
- e. Relief camps should be established to facilitate the migration of humans / livestock.
- f. To prevent the outbreak of epidemics, comprehensive emergency health response be planned by relevant stakeholders. Sizeable stock of life-saving drugs & vaccines be ensured.
- g. Need based health mobile teams in districts & talukas may be considered by concerned Health Departments.

National Response Guidelines against Locust Attack

50. Desert Locusts have threatened agricultural production in Asia, Middle East and Africa for centuries. 38% of landmass of Pakistan (60% in Balochistan, 25% in Sindh and 15% in Punjab) is the Desert Locust's breeding area while the whole country may be its invasion area, if not contained in breeding regions. Pakistan has

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also experienced serious outbreaks in the past and the last major outbreak was in 2019-20.

51. Department of Plant Protection (DPP) which is under administrative control of Ministry of National Food Security & Research (MoNFSR) is the lead agency for locust surveillance, control, monitoring, coordination and awareness, and is responsible for planning and execution of anti-locust operations in non-cropping areas, aerial operations and research. Provincial Agriculture Extension Departments are responsible for surveillance and control operations in respective cropping areas.

52. Locust invasion in Pakistan was successfully controlled in August 2020, through coordinated efforts of NDMA, NLCC (National Locust Control Centre), DPP, Provincial Agriculture Extension Departments, PDMAs and Pakistan Army. On successful control of locust, NLCC was closed by GoP on 4th November 2020. However, Monsoon season provides ideal conditions for hatching / breeding of desert locust, thereby threatening the national food security of Pakistan. Moreover, Pakistan remains prone to any trans-border invasion of locust from Iran, Arabian Sea (Arabian Peninsula / African Coasts) or Indian Rajasthan Desert.

Response Guidelines against Locust Attack

53. MoNFSR has prepared National Action Plan-2, covering the strategy and SOPs for surveillance and control operations against desert locust. Salient features of response against desert locust are: -

- a. Continuous monitoring of respective areas by DPP and provincial Agriculture Extension Departments against locust hatching / invasion.
- b. Awareness campaigns by DPP, PDMAs and agriculture extension departments for surveillance and various control measures (biological control, chemical control, cultural control etc) against locust.
- c. Timely training and licensing of new pilots enrolled by DPP (for its Beaver aircrafts) for anti-locust aerial operations.
- d. Timely placement of resources (aircrafts, vehicle mounted sprayers, trained staff and pesticides) at threatened locations.
- e. Dashboard monitoring of anti-locust survey and control operations, through mobile applications and e-Locust devices.


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- f. Incorporating Pakistan Rangers for surveillance along border areas in Punjab and Sindh.
- g. Control operations against any identified locust presence, using following means:-
- (1) Destruction of eggs through ploughing.
 - (2) Killing locust nymphs / hoppers through trenching.
 - (3) Bio-pesticides and water based (EC) chemical pesticides against locust nymphs and hoppers.
 - (4) Chemical pesticides should be used against mature adults and swarms.
 - (5) Aerial operation may be conducted against swarms in non-cropping areas.
 - (6) While using ULV chemical pesticides, all necessary precautions must be kept in mind to save humans, live stock, crops / trees and water sources from contamination / poisonous effects.

Conclusion

54. Pakistan lies in the region where Monsoon occurs as a regular climatic phenomenon, requiring accurate analysis of weather forecast, its probable effects and a well-integrated response. Therefore, there is a dire need of an efficient, proactive and synergized system for a well-coordinated response mechanism involving all the stakeholders, while addressing grey areas observed during Monsoon-2020. Flood risks can considerably be reduced through awareness, vigilance, early warning and timely response against continuously evolving situations but most of all through implementing well-planned mitigation measures.

Government of Pakistan
Prime Minister's Office
National Disaster Management Authority
Islamabad
Dated: 21 June, 2021



Brigadier
For Chairman NDMA
(Waseem Uddin)
Tel: 051-9214295
Fax: 051-9205086

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Distribution List. Attached.

Annexes

- A - NDM Act Clause – 9
- B - Flood Hazards Map – Pakistan
- C - GLOF Hazard Map – Pakistan
- D - Avalanche Hazard Map – Pakistan
- E - Landslide Hazard Map – Pakistan
- F - Drought Hazard Map – Pakistan
- G - Flood routing Map
- H - SITREP Format for Provinces / Districts
- I - Country Wide Location of NDMA Warehouses
- J - Important Contact Numbers
- K - Drought Mitigation Plan Matrix

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<u>Federal Departments</u>		
1.	PSO to President of Pakistan, President House, Islamabad	1
2.	PSO to Prime Minister of Pakistan, Prime Minister House, Islamabad	1
3.	Chairman Senate, Senate Secretariat, Islamabad	1
4.	Speaker National Assembly, National Assembly Secretariat, Islamabad	1
5.	Chairperson, Benazir Income Support Program (BISP), Islamabad	1
6.	Secretary to Prime Minister, Prime Minister's Office, Islamabad	1
7.	Secretary, Cabinet Division, Cabinet Secretariat, Islamabad	1
8.	Secretary Ministry of State, Frontier Region & Narcotics Control, Islamabad	1
9.	Secretary, Ministry of Defence, Rawalpindi	1
10.	Secretary, Ministry of Foreign Affairs, Islamabad	2
11.	Secretary, Ministry of Interior, Islamabad	1
12.	Secretary, Ministry of Planning, Development & Special Initiatives, Islamabad	2
13.	Secretary, Ministry of Water Resources, Islamabad	2
14.	Secretary, Ministry of Finance, Islamabad	2
15.	Secretary, Ministry of Communication & Postal Services, Islamabad	1
16.	Secretary, Ministry of Federal Education and Professional Training, Islamabad	2
17.	Secretary, Ministry of National Food Security and Research, Islamabad	1
18.	Secretary, Ministry of Housing and Works, Islamabad	1
19.	Secretary, Ministry of Railways, Islamabad	1
20.	Secretary, Ministry of Industries and Production, Islamabad	1
21.	Secretary, Ministry of Power & Petroleum, Islamabad	1
22.	Secretary, Ministry of Climate Change, Islamabad	1
23.	Secretary, Ministry of National Health Services Regulations &	1

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24.	Secretary, Ministry of Information & Broadcasting, Islamabad	1
25.	Secretary, Ministry of Parliament Affairs, Islamabad	1
26.	Secretary, Ministry of Kashmir Affairs and Gilgit Baltistan	1
27.	Director General Air Wing, Ministry of Interior, Islamabad	1
28.	National Counter Terrorism Authority (NACTA), Ministry of Interior, Islamabad	1
29.	Aviation Division, Cabinet Secretariat, Islamabad	1
30.	Additional Secretary to Prime Minister, Prime Minister's Office, Islamabad	1
31.	Chairman, PEMRA Islamabad	1
32.	Chairman Senate Standing Committee on Climate Change, Senate Secretariat, Islamabad	1
33.	Chairman, National Assembly Standing Committee on Climate Change, Islamabad	2
34.	Chairman, National Assembly Standing Committee on Water and Power, Islamabad	1
35.	Chairman, National Highway Authority (NHA), Islamabad	2
36.	Chairman, WAPDA, WAPDA House, Lahore	2
37.	Chairman, NADRA, NADRA Headquarters, Islamabad	2
38.	Chairman, Pakistan Telecommunication Authority, Islamabad	2
39.	Chairman, Federal Flood Commission (FFC), Islamabad	2
40.	General Manager, Pakistan Railways, Islamabad	2
41.	Chairman, Indus River System Authority (IRSA), Islamabad	2
42.	Director General, NHEPRN, Islamabad	1
43.	Director General, Civil Defence, Islamabad	2
44.	Director General, Pakistan Meteorological Department (PMD), Islamabad	2

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46.	Director General, Frontier Works Organization (FWO), Rawalpindi	2
47.	Director General, Geological Survey of Pakistan (GSP), Islamabad	2
48.	Pakistan Commission of Indus Water (PCIW), Lahore	2
49.	National Weather Forecasting Centre, Pakistan Meteorological Department, Islamabad	2
50.	Managing Director, Pakistan Tourism Development Corporation, Islamabad	1
51.	Managing Director, National Transmission and Despatch Corporation (NTDC), Lahore	1
52.	General Manager SACRED, SUPARCO, Islamabad	2
53.	Managing Director, Utility Stores Corporation, Islamabad	3
54.	Secretary, Pakistan Boy Scouts Association, Islamabad	2
55.	Secretary, Pakistan Girls Guide Association, Islamabad	2
56.	Director General, Federal Directorate of Education, Islamabad	1
57.	Chief Meteorologist, Flood Forecasting Division (FFD), Lahore	2
58.	Coordinator, National Command and Operation Centre (NCOC)	1
59.	Chief Engineer, Mangla Dam	1
60.	Chief Engineer, Tarbela Dam	1
<u>Provincial Departments</u>		
1.	Chief Secretary, Government of Punjab, Civil Secretariat, Lahore	1
2.	Chief Secretary, Government of Sindh, Karachi	1
3.	Chief Secretary, Government of Balochistan, Quetta	1
4.	Chief Secretary, Government of Khyber Pakhtunkhwa, Peshawar	1
5.	Chief Secretary, Government of AJ&K, Muzaffarabad	1
6.	Chief Secretary, Government of Gilgit Baltistan, Gilgit	1
7.	Secretary Irrigation Department, Government of Punjab	1
8.	Secretary Irrigation Department, Government of Sindh	1

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10.	Secretary Irrigation Department, Government of Khyber Pakhtunkhwa	1
11.	Secretary Irrigation Department, Government of AJ&K	1
12.	C&W Department, Government of Gilgit Baltistan	1
13.	DG PDMA, Punjab, Lahore	1
14.	DG, PDMA Sindh, Karachi	1
15.	DG PDMA, Balochistan, Quetta	1
16.	DG PDMA, Khyber Pukhtunkhawa, Peshawar	1
17.	DG SDMA AJ&K, Muzaffarabad	1
18.	DG GBDMA, Gilgit	1
19.	DC, Islamabad	1
20.	Director Emergency & Disaster Management, CDA Islamabad	1
21.	DG Rescue 1122 Punjab, Lahore	1
22.	DG Rescue 1122, Balochistan, Quetta	1
23.	DG Rescue 1122, Khyber Pukhtunkhawa, Peshawar	1
24.	DG Rescue 1122 AJ&K, Muzaffarabad	1
25.	DG Rescue 1122 Gilgit Baltista, Gilgit	1
<u>Developmental & Implementation Partners</u>		
1.	Resident Coordinator, UNRC, Islamabad	1
2.	Country Head, WHO, Islamabad	1
3.	Country Head, UNWOMEN, Islamabad	1
4.	Country Director, UNHABITAT, Islamabad	1
5.	Country Head, PHF (Pakistan Humanitarian Forum), Islamabad	1
6.	Country Head, IOM, Islamabad	1
7.	International Committee of the Red Cross (ICRC), Islamabad	1
8.	Country Director, UNOCHA, Islamabad	1
9.	Country Director, WFP, Islamabad	1
10.	Country Director, UNHCR, Islamabad	1

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12.	Country Director, UNICEF, Islamabad	1
13.	National Humanitarian Network (NHN), Islamabad	1
14.	Chairman, Pakistan Red Crescent Society (PRCS) National Headquarters, Islamabad	1
<u>Pakistan Armed Forces</u>		
1.	Crisis Management Cell, JSHQ, Chaklala, Rawalpindi	3
2.	Military Operations Directorate, General Headquarters Rawalpindi (For Distribution to Field Formations / Commands / Headquarters)	15
3.	Director (Operations), Naval Headquarters, Islamabad	3
4.	Maritime Security Agency	2
5.	Director (Operations), Air Headquarters, Islamabad	3
6.	Director General, Strategic Plans Division (SPD), Rawalpindi	1
7.	Arms Branch, Engineers Directorate, General Headquarters, Rawalpindi	3
8.	Director General, National Logistic Cell, Rawalpindi	1
9.	Headquarters Punjab Rangers (Operations Branch), Lahore	1
10.	Headquarters Sindh Rangers (Operations Branch), Karachi	1
11.	Headquarters Frontier Corps (Operations Branch), KP (North), Peshawar	1
12.	Headquarters Frontier Corps (Operations Branch), KP (South), D.I. Khan	1
13.	Headquarters Frontier Corps (Operations Branch), Balochistan (North), Quetta	1
14.	Headquarters Frontier Corps (Operations Branch), Balochistan (South), Turbat	1
15.	Frontier Constabulary, Peshawar	1
16.	Commanding Officer, 6 Army Aviation Squadron, Islamabad	1

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Ser	Department / Agencies	No of Copies
17.	Headquarters Anti Narcotic Force (Operation Branch), Rawalpindi	1
<u>Internal</u>		
1.	PS to Chairman, NDMA	1
2.	Chief of Staff, ERRA	1
3.	Member (Operations), NDMA	1
4.	Member (A&F), NDMA	1
5.	Member (DRR), NDMA	1
6.	Senior Capacity Building Specialist (NIDM / PMU / Media)	1
7.	Director (Response), NDMA	5
8.	Director (Logistics), NDMA	1
9.	Director (R&R), NDMA	1
10.	Director (Administration), NDMA	1
11.	Director (Finance), NDMA	1
12.	Director (Implementation), NDMA	1
13.	Project Manager (GCC), NDMA	1
14.	Deputy Director (Procurement), NDMA	1
15.	Deputy Director (ICT), NDMA	1
16.	Media Advisor, NDMA	1

8. Establishment of the National Disaster Management Authority.— (1) The Federal Government shall, immediately after issue of notification under sub-section (1) of section 3, establish an Authority to be known as National Disaster Management Authority.

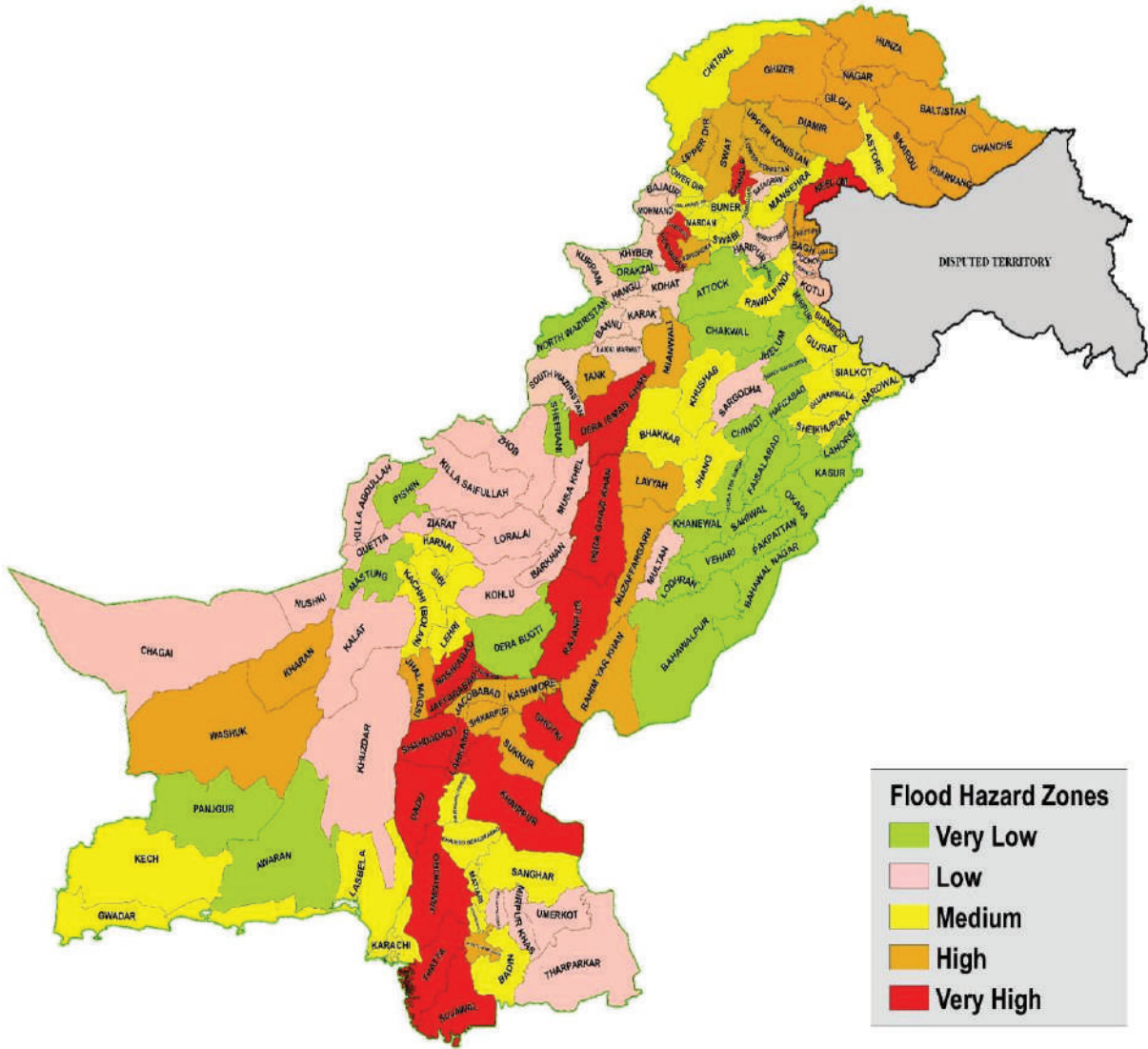
(2) The National Authority shall consist of such number of members as may be prescribed and shall include [the Director General] as its Chairperson.

(3) There shall be a Director General of the National Authority, to be appointed by the Federal Government, on such terms and conditions, as may be prescribed.

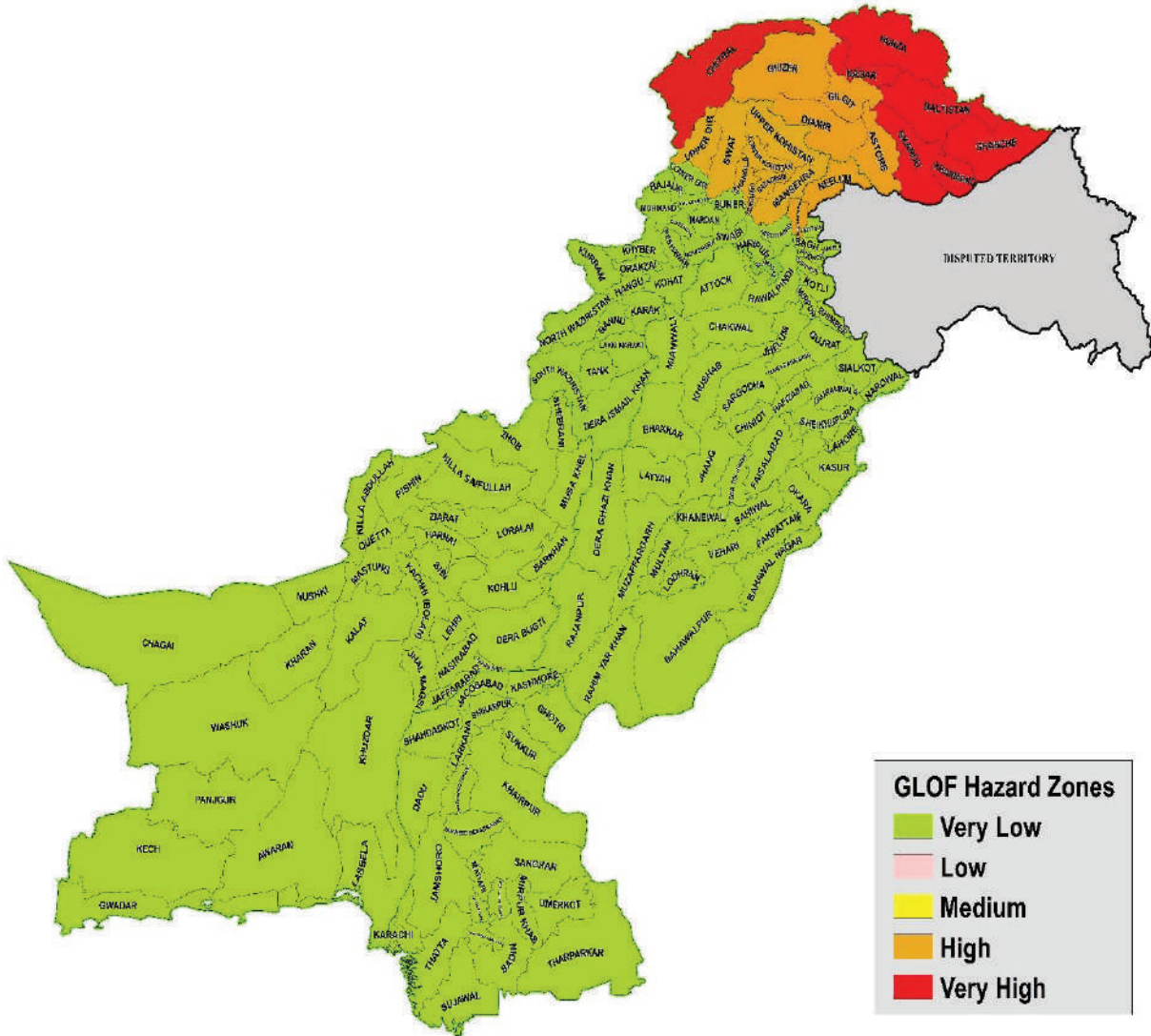
9. Powers and functions of the National Disaster Management Authority.— The National Authority shall—

- (a) act as the implementing, co-ordinating and monitoring body for disaster management;
- (b) prepare the National Plan to be approved by the National Commission;
- (c) implement, co-ordinate and monitor the implementation of the national policy;
- (d) lay down guidelines for preparing disaster management plans by different Ministries or departments and the Provincial Authorities;
- (e) provide necessary technical assistance to the Provincial Governments and the Provincial Authorities for preparing their disaster management

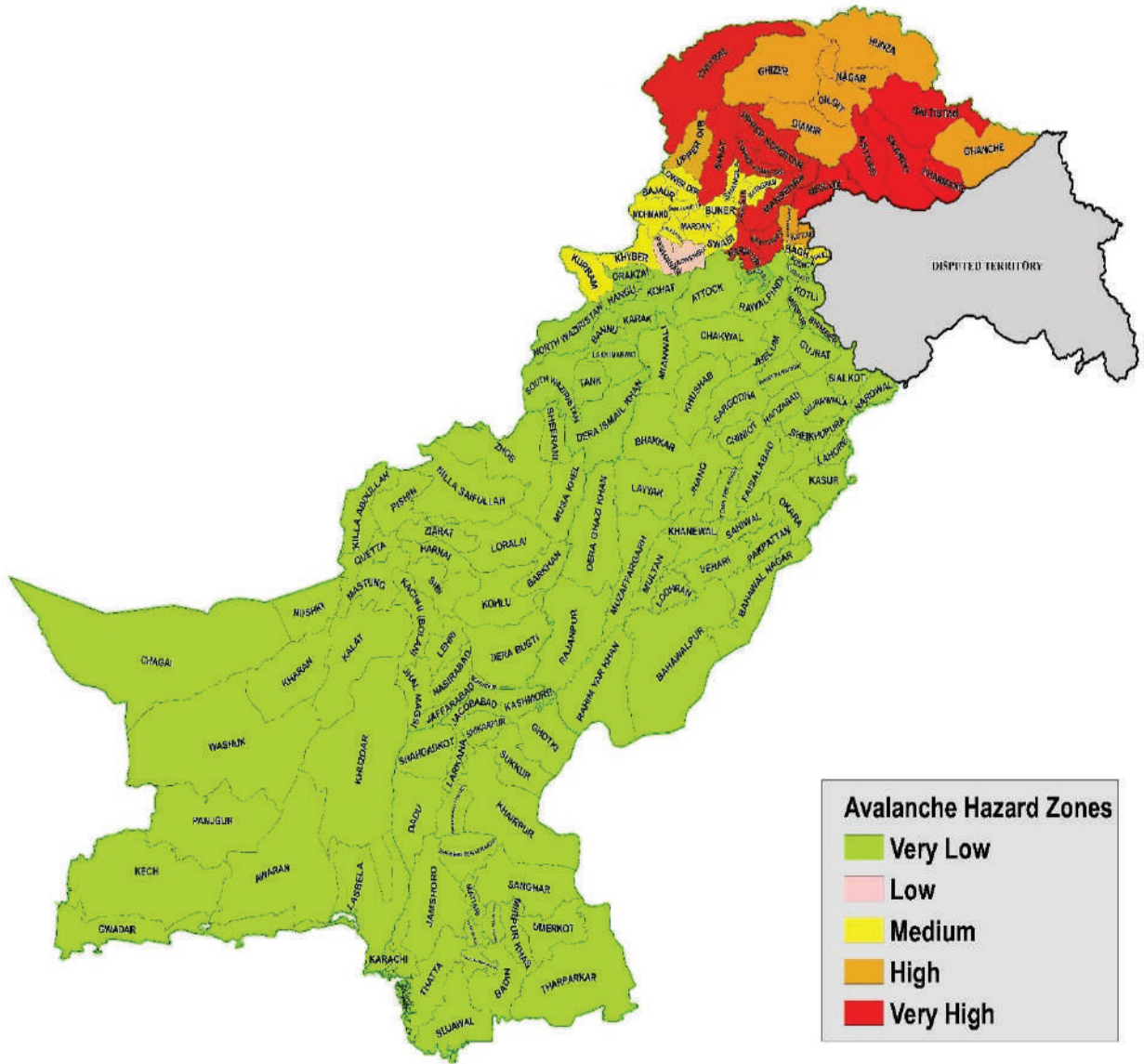
Flood Hazard Map - Pakistan



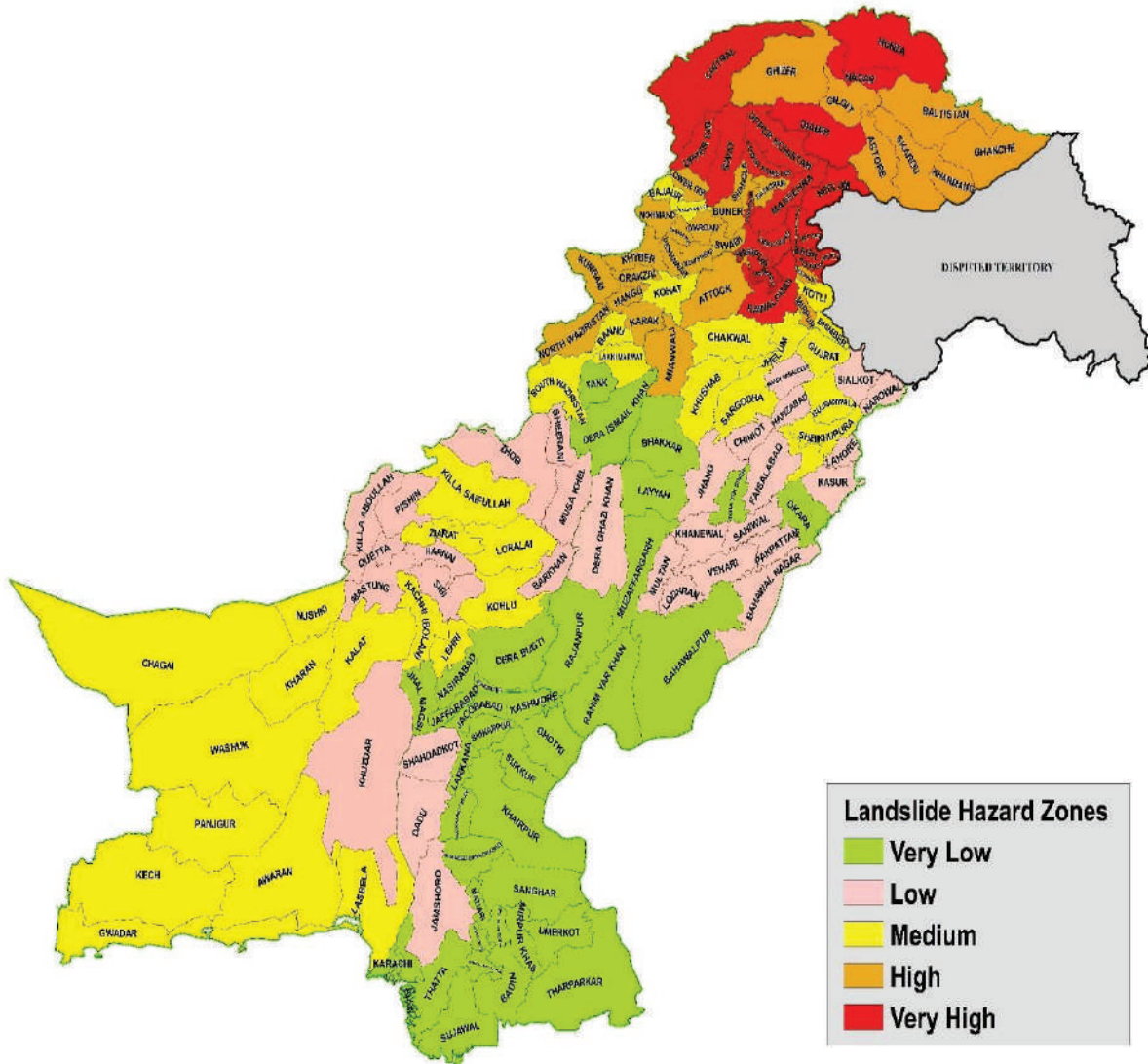
GLOF Hazard Map - Pakistan



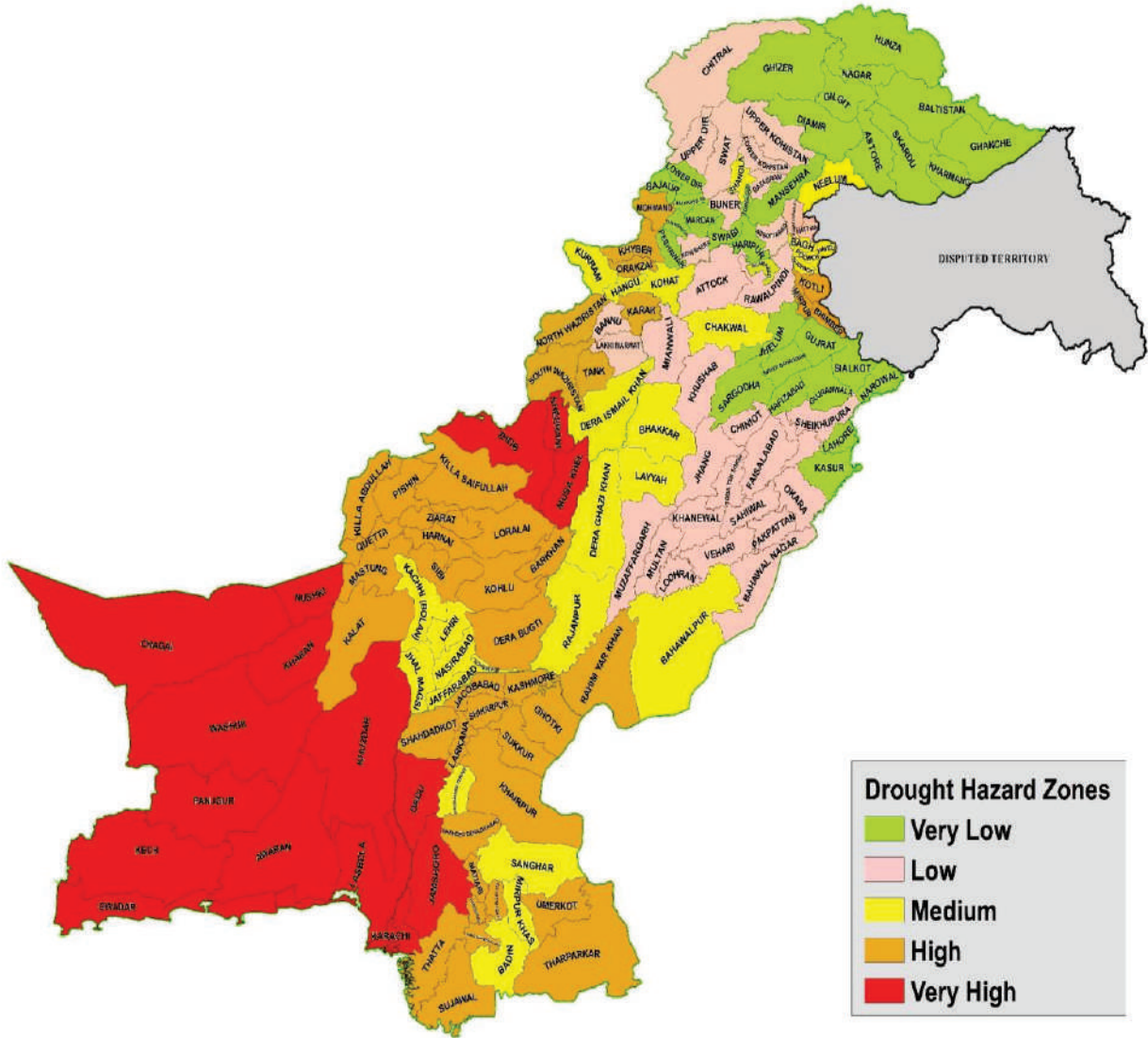
Avalanche Hazard Map - Pakistan

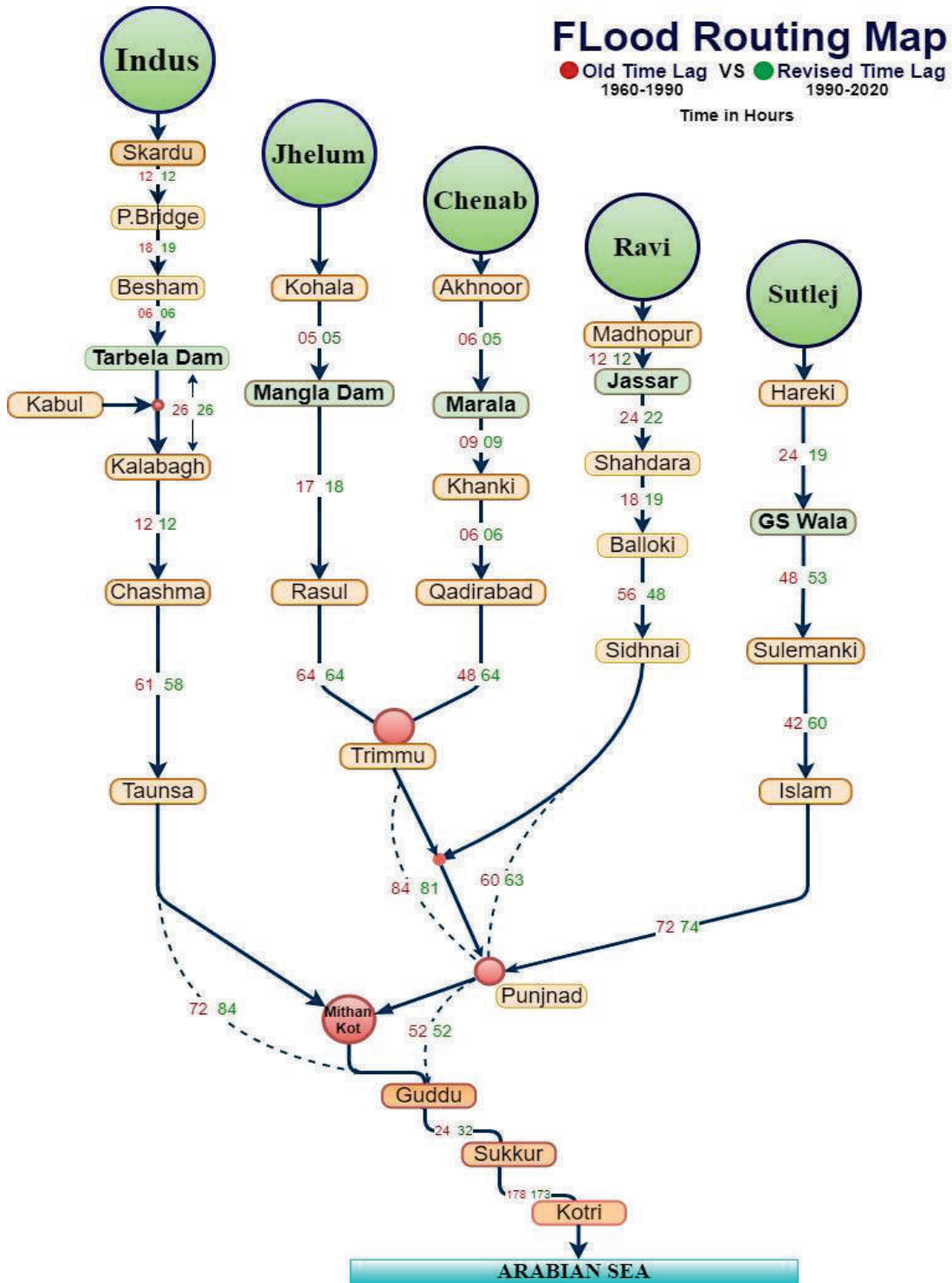


Landside Hazard Map - Pakistan



Drought Hazard Map - Pakistan





National Monsoon Contingency Plan-2021

Annex H

SITUATION REPORT FORMAT FOR PROVINCES

MONSOON 2021 DAILY SITUATION REPORT NO – 001

(PERIOD COVERED: 1300 HRS __ June 2021 – 1300 HRS __ June 2021)

1. Area Affected in Last 24 Hours

Ser	District	Incident / Area Affected / Damage
a.		

2. Extent of Damages

a. Damages (During Significant Events – Monsoon 2021)

Ser	Category	Nos	Damaged/Washed Away/ Affected
a.			

b. Summary of Overall Preliminary Damages of Infrastructure & Private

Properties

District	Roads /Track	Bridge	Shop	Hotel	Masjid	Houses		Power Houses
						Partially Damage	Fully Damage	

c. Preliminary Casualty – Death / Injured (from _____ to _____)

District	Deaths				Injured			
	M	F	C	T	M	F	C	T

3. Flood Relief Activities

a. Relief Camps Established

b. Rescue Activities

c. Aviation Activities

d. Relief Activities

District	Tents	Food Items (Tons)	Blankets	Plastic mats	Sleeping bags

4. Threat to Next Likely Areas

5. River Discharges

6. Rainfall recorded during Past 24 Hours

7. Weather Forecast for Next 24 Hours

COUNTRY WIDE LOCATION OF NDMA WAREHOUSES

1. **Strategic Humanitarian Response Facilities (HRFs)**

Serial	Location	No of Sheds		
		PDMA	NDMA	Total
a.	Jallozai / KP	3	1	4
b.	Lahore / Punjab	3	1	4
c.	Muzaffargarh / Punjab	2	1	3
d.	Jamshoro / Sindh	2	1	3
e.	Sukkur / Sindh	2	1	3
f.	Quetta / Balochistan	3	1	4

2. **NDMA Warehouses.** In addition to strategic HRFs, NDMA has following warehouses in the Country:-

a. **Punjab**

- (1) Rawalpindi (Central Stock to support Punjab / KP / FATA / AJ&K/ GB / ICT).
- (2) Lahore.

b. **Sindh**

- (1) Karachi.
- (2) Sukkur (Central stock to support Sindh / Balochistan).

c. **Balochistan.** Quetta.

d. **AJ&K.** Muzaffarabad.

e. **GB**

- (1) Gilgit.
- (2) Skardu.

3. **Flospans.** 53 x Flospans have been established at different location across the Country.

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Annex J

IMPORTANT TELEPHONE NUMBERS

Ser	Department	Contact Number
1.	National Emergency Operation Centre (NDMA) Islamabad	UAN-051-111-157-157 051-9205037
2.	Provincial Emergency Operation Centre (PEOC) Punjab	042-99204408 042-99203163
3.	Provincial Emergency Operation Centre (PEOC) Sindh	021-99332005 021-99332003
4.	Provincial Emergency Operation Centre (PEOC) Balochistan	081-9241133 081-9241118
5.	Provincial Emergency Operation Centre (PEOC) KPK	091-9213867 091-9213845 091-9213855
6.	State Emergency Operation Centre (SDMA) SDMA AJ&K	05822-921536 05822-921643 05822-921101
7.	GBDMA Emergency Operation Centre, Gilgit	05811-922030 920874-75
8.	Pakistan Meteorological Department (PMD)	051-9250367 051-9250368 051-9250364
9.	Flood Forecasting Division, Lahore	042-99200208
10.	Army Flood Control Centre, Engineers Directorate	051-5202059 051-5202060 203525 (DEFCON) 8000-30855 (PASCOC)
11.	DG NHEPRN	051-9255708-9
12.	Federal Flood Commission	051-9244604 051-9244616
13.	IRSA, Islamabad	051-9244600 051-9244599
14.	SUPARCO Islamabad	051-9075265
15.	Nullah Lai Control Room	051-9250566
16.	Rescue 1122 Punjab	042-37423372
17.	Rescue 1122 Rawalpindi	051-9291185

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Ser	Department	Contact Number
18.	Rescue 1122 Khyber Pakhtunkhwa	091-9222483-4
19.	Rescue 1122 Gilgit Baltistan	05811-922137
20.	Rescue 1122 Azad Jammu & Kashmir (SDMA)	0333-3331122
21.	Geological Survey of Pakistan, Islamabad	051-9269579 051-9255141
22.	COMKAR Karachi	021-48506113 021-48501705
23.	Pakistan Maritime Security Agency, Karachi	021-99214624 021-99214625
24.	Marala Headworks Observatory	052-35021027
25.	PCIW (Pakistan Commission for Indus Water) Lahore	042-99212783-86
26.	GM, Pakistan Railway Lahore	042-99201700
27.	Punjab Irrigation Department	042-99212117-8
28.	Balochistan Irrigation Department	081-9201074
29.	Sindh Irrigation Department	021-99222949 021-99222950
30.	Azad Jammu & Kashmir Irrigation Department	05822-921596 05822-921157
31.	KPK Irrigation Department	091-9210845 091-9212116
32.	Civil Defence Punjab	042-99212109 042-99212111
33.	Civil Defence Sindh	021-99243765
34.	Civil Defence KPK	091-9212176 091-2263158-59
35.	Civil Defence Balochistan	081-9201853 081-9201118
36.	Terbela Dam	0938-281185
37.	Mangla Dam	0544-639353
38.	Rawal Dam	051-9255756 051-9255757-8-9

DROUGHT MITIGATION PLAN MATRIX

Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
Water Security	<ul style="list-style-type: none"> • Enhance water storage infrastructure capacity • Promote <ul style="list-style-type: none"> • Water conservation • Integrate water resource management • Remote sensing driven capacity • Sustainable use of water • Community participation & public awareness on water conservation • Ecological approaches • Reinforce legislative framework • Optimize Wetlands capacity • Mainstreaming Climate Change 	<p><u>Supply Side Development</u></p> <p><u>Interventions:</u></p> <ul style="list-style-type: none"> • National water storage capacity enhanced; • Thar Canal; • Flood water storage along Sutlej; • Extension of Raineer Canal; • Transferring piped water in Thar & Kohistan; • RO Plants installation; • Fresh water extraction; • Tube wells; • Extension of water distribution network 	<ul style="list-style-type: none"> • Water contingency planning • Water tinkering / bottled distribution • Water purification • Cloud seeding (artificial rains) • Hygiene & sanitation
		<p><u>Water Demand Management:</u></p> <ul style="list-style-type: none"> • Water conservation awareness • Participatory approaches • Legislative & administrative measures • Community based sustainable solutions 	
		<p><u>Ecological Solutions:</u></p> <ul style="list-style-type: none"> • Revive natural water basins • Promote rain water harvesting • Water storage promotion • Small and check dams • Reverse osmosis plants • Water spreading • Recycling of used water • Participatory approach in public interventions; Create Water 	

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Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
		<p>Management Boards regionally and in provinces</p>	
Food & Agriculture	<ul style="list-style-type: none"> Introduce drought and heat resistant crops Horizontal expansion of cultivated lands Corps risks management Efficient food chain management Coordinated and inclusive policy implementation Awareness raising and community capacity building in arid zone Arid zone agriculture research institutes in Sindh & Balochistan Water loss reduction Integrated water basin management 	<p>Arid Zone Agricultural Practices:</p> <ul style="list-style-type: none"> Promote sailaba and khushkaba practices Introduce drip irrigation Cropping calendars adapted to avoid heat losses Conjunctive use of surface and ground water Shift to less water demanding crops Saline water agricultural practices Soil conservation Rain water harvesting & storage Watershed agricultural management Soil fertilization Best practices to be widely shared 	<p>Food Security Short Term Response:</p> <ul style="list-style-type: none"> Deployment of wheat reserves in the vulnerable districts Food security vulnerability assessment Food distributions to the vulnerable population Efficient & equitable distribution mechanisms Exit strategy
Health	<ul style="list-style-type: none"> Promote health security through improved health service delivery Reinforce preventive and curative health focus Mainstreaming reproductive health standards Infrastructure and human resource development Health awareness raising 	<p>Developmental: Gap filling in health infrastructure;</p> <p>Health Service Delivery & Emergency Response: Following to be reinforced:-</p> <ul style="list-style-type: none"> Preventive health care Emergency health outreach Reproductive health care Community based malnutrition programme Disease early warning, epidemic control and responses Health referral system Human resource deficiencies addressed Health advocacy and capacity building 	

National Monsoon Contingency Plan-2021

Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
Rangeland & Livestock Management	<ul style="list-style-type: none"> • Policies aligned with environmental sustainability • Promote collaborative rangeland management • Governance & ownership issues streamlined • Incentive driven community based management. • Afforestation efforts. • Mitigate desertification. • Renewable energy solutions to check deforestation. • Research institutes. • Sustainable livestock population. • Promote livestock and rangeland research. • Private sector's inclusion in veterinary service. 	<p><u>Rangeland Management:</u> Promote:</p> <ul style="list-style-type: none"> • Vegetative barriers to prevent erosion. • Mapping / stocktaking. • Introduction of exotic grasses, trees varieties. • Water storage and rainwater harvesting. • Sustainable usages. • Revival / reinvigoration. • Heat tolerance promoted. • Desertification measures. • Watershed management. • Check deforestation through participatory methods. • Artificial fertilization techniques. • Controlled rangeland burning. <p><u>Livestock Management:</u></p> <ul style="list-style-type: none"> • Census, audit. • Veterinary cover. • Disease surveillance & response. • Multi nutrient blocks. • Promote de-stocking. • Livestock sanctuaries. • Communities capacity building in livestock management. • Advocacy, awareness generation. • Value addition of livestock products. 	<p><u>Livestock Emergency Management:</u></p> <ul style="list-style-type: none"> • Mapping and monitoring of vulnerable caseload • Emergency response planning, management • Livestock sanctuaries deployed with fodder and water • Fodder banks to be deployed • Introduce briquettes / MNBs as emergency fodder
Climate Change Adaptation		<ul style="list-style-type: none"> • Climate change hazards, risk and vulnerability mapping. • Scenarios development. • Adaptation strategies and actions. 	

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Indicator	Policy Inputs	Developmental / Mitigation / Emergency Response Measures	
		Long to Medium Term	Short Term
		<ul style="list-style-type: none"> • Generate awareness. 	
Community Resilience		<p>CBDRM approach for reinforcing resilience as:</p> <ul style="list-style-type: none"> • Structural solutions. • Non-structural solutions. • Ecological solutions. • Climate change adaptation. 	



National Disaster Management Authority

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